

**IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF PENNSYLVANIA**

CONSTELLATION NEWENERGY, INC., :  
:   
Plaintiff, : Civil Action No. 02-CV-2733 (HB)  
:   
v. :   
:   
POWERWEB TECHNOLOGIES, INC., :   
:   
:   
Defendant. :

**DECLARATION OF KETAN "KEITH" MISTRY**

Ketan "Keith" Mistry declares:

1. I am the President of Energy Tracking, Inc. ("ETI") in Garfield, New Jersey.
2. ETI builds energy sensing devices and designs software to gather, analyze and present energy usage information.
3. I make this declaration from personal knowledge.
4. In 1997, ETI began development of an energy information system. Attached as Exhibit A to this declaration and Bates-labeled as ETI000904 is a true and correct copy of correspondence between myself and a software programmer outlining the software that we were developing in 1997.
5. By April 1999, ETI had a fully developed and functional software that would enable a customer to review energy usage and billing calculations via the internet. Attached as Exhibit B to this declaration and Bates-labeled as NE011718 (PW Ex. 174) is a true and correct copy of a bid proposal to BOMA Atlanta which describes ETI's program, our corporate history and the functionality of the program offered to our customers.

6. In March or April 1999, David McGeown, a NewEnergy employee, introduced me to other NewEnergy employees in New York.
7. In July 1999, ETI completed a proposal of the ETI program to provide metering services for a customer of AES NewEnergy ("NewEnergy") in New York called TrizecHahn. This program would allow TrizecHahn to access its energy information via the internet. Attached as Exhibit C and Bates-labeled as ETI001032 (PW Ex. 173) is a true and correct copy of correspondence regarding ETI's TrizecHahn proposal.
8. The TrizecHahn site was successfully installed and operational by October 14, 1999.
9. In September 1999, ETI responded to inquiries by NewEnergy about a possible investment in the company. Attached as Exhibit D and Bates-labeled NE005654-5656 (PW Ex. 112) is a true and correct copy of a letter to Andrew Singer from me regarding this investment.
10. In January 2000, ETI was engaged by NewEnergy to develop a web-based application that would enable NewEnergy's customers to access customer energy consumption data.
11. In February 2000, ETI and NewEnergy drafted a term sheet that describes ETI's role in developing a web-based application to enable NewEnergy's customers to access energy usage and cost data. Attached as Exhibit E and Bates-labeled ETI000482 - 486 (PW. Ex. 176) is a true and correct copy of the NewEnergy-ETI Tracking Term Sheet.
12. Throughout 2000, ETI continued to modify the energy information system. Attached as Exhibit F and Bates-labeled as ETI001336-7 (PW Ex. 177) is a true and correct copy of an e-mail from Robert Morgan to me discussing the requirements for WebJoules.
13. In July, 2000, I was asked by Andy Colman of NewEnergy to write curtailment software which would calculate a customer's baseline energy consumption according to terms published by the California ISO. Attached as Exhibit G and Bates-labeled ETI000488 is a true and correct

copy of Andy Colman's e-mail and my response, as well as my handwritten notes on the back of the email which were the basis by which I wrote NewEnergy's first curtailment software.

14. In August 2000, I drafted specifications for a curtailment module to be added to the existing energy information system. Attached as Exhibit H and Bates-labeled as ETI000499-502 (PW Ex. 179) is a true and correct copy of these specifications.

15. In late 2000 and early 2001, I reviewed bids for the development of a curtailment module on behalf of NewEnergy. On January 16, 2001, I received a proposal from Powerweb. A true and correct copy of this proposal is attached as Exhibit I to this declaration and Bates-labeled as NE004672-84 (PW Ex. 110).

16. ETI's technology, in all of its stages of development, was based purely on my own work and not influenced in any way by any information provided by Powerweb.

17. I have no knowledge that any present or former AES or NewEnergy employee used Powerweb's technology or information in any way or disclosed it to third parties.

I understand that the statements made in this declaration are made subject to 28 U.S.C § 1746, and as such I declare under penalty of perjury that the foregoing is true and correct.  
Executed on May 28, 2004 in New Jersey.

  
\_\_\_\_\_  
Ketan "Keith" Mistry



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Dt. 11/21/97

Ketan,

I am enclosing a list of jobs completed in Phase II and jobs which are in development as of today.  
This is for your reference.

- Kailash

COMPLETED WORKS

1. LandLine Data Acquisition using protocol version dated Oct 24, 1997
2. Wireless Data Acquisition using protocol version dated Oct 24, 1997
3. Database redesign to accomodate
  - a) Changes due to new landline protocol
  - b) Wireless data acquisition
  - c) Generic "Distributor-utility-customer" model of clients.
4. Database change implementation
5. Setup of EnergyTracking's in-house web site with WWW and FTP Servers
6. Verification of router access and router software to provide WWW and FTP access
7. Security scheme implementation on the in-house web server
8. Upgrading Windows NT 4.0 to Service Pack 3 for better security
9. Uploading Java Development Suite and JDBC drivers
10. Establishing connectivity to Database Server from Internet Server
11. Query form script
12. Getting aggregate and raw data from database server for specified meter-id between specified dates
13. Presenting aggregate data in HTML table and in downloadable text form
14. Presenting raw data in downloadable text form

DEVELOPMENT

<u>Activity</u>		<u>Estimated Completion</u>
1. Wireless data acquisition integration testing	-	12/1/97
2. Landline raw data update to database server	-	12/1/97
3. Configuration and System Monitoring changes	-	12/1/97
4. PowerBuilder GUI	-	12/7/97
5. Charting aggregate data	-	12/7/97
6. Installation of MailSrv on Web Server	-	12/7/97
7. Design for callout over landline	-	12/7/97
8. Implementation of landline callout model (includes data acq and setup modifications on callout)	-	12/15/97
9. Interface for selecting meter setup modification	-	12/15/97

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ETI 000904

(and callout initiation from GUI)

- 10. Web interface for meter setup - 12/15/97
- 11. Meter setup modification when meter calls in - 12/15/97

Next level of software deployment will be on 12/7/97. This will include wireless data acquisition bullets 1, 2, 3, 4 and 5.

Development of further activities has not been planned yet. No unplanned activities can be taken up till 12/15/97.

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ETI 000905



Proposal to Provide:

**ENERGY INFORMATION AND DECISION  
SUPPORT SERVICES**

To:

**BOMA ATLANTA**

Mr. Stewart Huey, Executive Vice President  
6855 Jimmy Carter Boulevard  
Suite 2830  
Norcross, GA 30071

Presented By:

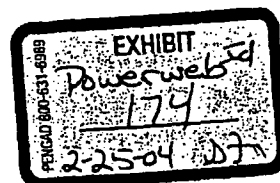
Ohm Tech Labs, Inc.  
Energy Tracking, Inc.

Due: July 16, 1999

Executed by:

Keith Mistry  
President  
Ohm Tech Labs, Inc.  
Energy Tracking, Inc.  
141 Lanza Ave, Bldg. 12  
Garfield, NJ 07026

Date: July 14, 1999



NE 011718

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Ohm Tech Labs / Energy Tracking Inc.  
Electric Information and Decision Support Services

Gentlemen:

Ohm Tech Labs welcomes the opportunity to submit a proposal to BOMA Atlanta. Two corporations will comprise of the team, namely, Ohm Tech Labs, Inc. (OTL) and Energy Tracking, Inc. (ETI). Energy Tracking is a wholly owned subsidiary of Ohm Tech Labs, Inc.

Ohm Tech Labs will be responsible for providing and deploying all necessary hardware and manpower for the fulfillment of the construction objectives of this RFP. Energy Tracking via its state of the art Energy Information System will be responsible for data acquisition, processing and the delivery aspects of the RFP. Ohm Tech Labs who will undertake sole responsibility to coordinate and deliver all aspects of this RFP. The combined capabilities of these two corporations will demonstrate the experience, qualifications and enhanced technologies that can be delivered to the members of BOMA.

OTL has a proven track record specializing in data acquisition, validation, warehousing, data mining and is well positioned to provide a turnkey solution. To date, we have processed over 150,000 remote calls and over 700 million energy detail records.

We are committed in aiding BOMA members to become ideally positioned for electric deregulation. In addition, our host of data acquisition products and services will enable them to meter by facility and also sub meter by department and or process, enabling them to secure immediate benefits as well as long term benefits.

ETI has developed a state-of-the-art Energy information System (ETIcore) that is accessible 24 hours a day, 365 days a year. A simple Internet browser is all that is required to access the system.

Thank you for soliciting our participation in your efforts.

Ohm Tech Labs / Energy Tracking Inc.  
Electric Information and Decision Support Services

### Corporate History

Ohm Tech Labs was founded in 1993 and is a certified minority business enterprise by New Jersey Department of Commerce and New Jersey Department of Transportation.

Since its inception OTL has been able to fulfill and surpass the measurement and verification requirements of various demand side management programs such as Public Service Electric & Gas's "Standard Offer" contract. The "Standard Offer" required an independent third party to perform 24-hour real time monitoring, measurement and verification of all conservation measures being adopted during the contract term. The interval data acquired from the remote monitoring units would identify the kWh savings allowing participants to invoice the Utility under the "Standard Offer" contract terms. Due to the success of "Standard Offer", the Utility unveiled a "Standard Offer - II" contract. The term of the "Standard Offer" is 10 years. This 10-year term has enabled OTL to establish a solid foundation based on existing metered sites providing secured revenue well over the next decade.

Ohm Tech Labs has over six years of experience in providing Measurement and Verification (M&V) services that provides clients with a range of services from remote metering to invoicing. OTL is an original equipment manufacturer (OEM) for multiple products whose primary function is to measure, store interval data and remotely transmit data. All hardware and software development is performed in-house via our Research & Development and Information Systems Department (IS).

OTL's central station receives over 3000 calls per month and processes the respective data into time of use (TOU) bins. OTL also provides acquisition, data processing, billing and maintenance services. During the past 6 years OTL has provided turnkey services ranging from construction to final billing. OTL's clients are primarily Energy Service Companies (ESCO's) who interact with the Utility and host facility in which OTL is the independent M&V agent.

President Clinton enacted an executive order requiring all federal facilities to reduce their energy consumption by 30%. This mandate required that M&V be instituted as a quality control measure. OTL due to its long standing status for providing quality products and services has been made the "sole vendor of choice" by Duke Solutions ( a subsidiary of Duke Power ) for the \$150 million South-East energy service performance contract (ESPC) that they have been awarded.

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In 1997, OTL visualizing the changes in the energy industry focused upon developing and enhancing products, technology and services that would fulfill the various needs of the industry.

We intend to demonstrate that these latest products and capabilities will not only fulfill the requirements of this RFP but will surpass it. The members of BOMA will have 24-hour, real time data access via a dynamic web site through which metered data can be queried, viewed, graphed and uploaded in to a spreadsheet format. Enhanced features such as billing, tariff comparison, Real Time Pricing, auto e-mail services provide greater flexibility and value.

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### Current Requirements:

BOMA's immediate requirements are to build load profiles *on an aggregate and real-time basis* and provide the critical energy information on an enterprise wide scale, specifically:

BOMA Requirements	ETIcore's Capability
Demand (kW)	Yes
Energy (kWh)	Yes
Time Stamp	Yes
Apparant Energy (kVAh)	Yes
Power factor	Yes
Benchmark\$/sq.ft., BTU/sq.ft.	Yes
Load Profiles	Yes
Energy Costs	Yes
Warnings and Alarms	Yes
Multi-Site Aggregation	Yes

More Enhanced Features	ETIcore's Capability
Billing	Yes
Conjunctive Billing	Yes
Real Time Pricing	Yes
E-mail Reporting	Yes
Import Historical Interval Data	Yes
Drill down Profiling Monthly, Daily or Hourly	Yes
Stacked Graphing	Yes
Profile Active / Reactive Energy	Yes
Imbalance Calculations	Yes
Call Meter(s)	Yes
Program Meter(s)	Yes
Call Logs	Yes
Activate/Deactivate Loads	Yes

In order to perform this requirement each facility's power feed will need to be monitored via a data recorder with a real time clock. This can be performed in two ways. First by shadowing (i.e.; placing a meter in parallel) with the existing meter or secondly by having the Utility provide a pulse output from the existing meter. We can do both type of measurements but recommend a pulse output simply because it is less complex and far less expensive.

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OTL has multiple hardware products that are specifically designed to meet various measurement needs. Our products have the capability to measure pulse, runtime, analog parameters, and perform power measurements by phase enabling active, reactive, and power factor measurements. These products have been extensively deployed to measure directly at the meter or perform sub metering functions such as chillers, motors, heating plants, VFD's etc.

While similar types of recorders are widely available, we are able to provide a fully integrated end-to-end solution. Our products have many superior functions that have been integrated based on experience. Some of these features are self-diagnostics, watchdog, two-way communications, remote programmability, variable log intervals, time synchronization, checksum for data integrity. Details are listed in the "Hardware Salient Features and Operation" in Section 3.

#### **Communications:**

All our products are equipped with an on board telephone modem enabling two way communications. A dedicated telephone line is not required if the recorder is placed in a call out only mode. If a hardwired telephone line installation is too expensive, then a cellular phone can be installed near the meter. While the ability to interface to a Motorola two-way reflex pager to our pulse recorder is possible, it is currently too expensive to transmit interval records.

#### **Software:**

No investment in software is required. The only software required to access the data from our central station is simply a web browser. Ideally, Internet Explorer (IE 4.0) will suffice. Microsoft Outlook Express will allow e-mail's to be received.

#### **Submetering:**

Sub metering by process, is OTL's core business as a measurement and verification company. Our various products are designed and utilized specifically for monitoring chillers, heating plants, VFD's, HVAC, lighting. In addition, our billing module can aid in determining the \$ cost per widget. OTL also has a SCADA interface for process measurement and control which can be customized based on clients needs. Details are provided in Section 4. We have provided our hardware product costs in Section 6.

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**Products:**

Ohm Tech has two products that will enable BOMA members to fulfill their goals. The local Utility can be requested to provide a pulse output from the meter. This is the most ideal option since it will allow a low cost pulse recorder to be installed. OTL's second product can shadow the existing meter and it meets ANSI C12.16 standards for solid state meter accuracy. This meter can provide active and reactive energy values enabling power factor computation. This is a more expensive option since it will require current transformers, potential transformers (the meter can only take up to 480 VAC) and a licensed electrician to perform the work. In addition, a telephone line and a 110 VAC power outlet will be required relatively close to the meter. Costs are provided in Section 6. All meters will report to our central station and the data will be available for review within 5 minutes of the download.

**Non-Disclosure Agreement:**

No data will be released to any entity without the prior written consent of the respective individual owner(s)/manager(s) and/or BOMA Atlanta.

**Exceptions to the RFP:**

No exceptions are taken.

**Monitoring of Additional Energy Resources:**

In addition to electric energy monitoring, we can also monitor other resources such as Gas, Water, Oil, Propane, Steam, etc.

**Additional Services:**

- Historical Bill Analysis – We can audit past Utility bills for compliance to rate structures and accuracy of billed readings. Often, a facility is eligible to switch to an alternate tariff. We can determine the cost impact and potential savings from doing so.
- Third party interval data – Sometimes facilities will have access to interval data from the Utility, EMS or a third party metering company. We can integrate this data into ETIcore to further aid in the analysis and reporting.

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#### Hardware - Supplying Real Time Metering Equipment:

OTL has been providing real time automatic meter reading since its inception.

The product that will be deployed is called the Acyuta. The Acyuta is a low cost, multi-tasking, 3-channel interval pulse recorder with a real time clock, 64K random access memory (RAM) and a 2400-baud modem. This AMR unit has both call in and call out capability. The amount of memory allows data to be stored for up to 45 days. Detailed specifications are provided in Section 3.

The onboard real time clock tracks the time in hours, minutes, seconds, month, day, year and day of the week. It is very similar to a personal computer that also has an embedded real time clock. The real time clock on-board will be synchronized with the local time at the various facilities on each call in. It is important to note that the real time clock on the Acyuta is backed up by a lithium battery for 10 years.

It is estimated that each site will not take more that five hours to retrofit. This should provide adequate time to perform functions such as setup power source, telephone communications, meter hookup, meter initialization, test call in / call out, and complete all documentation.

Although the RFP has not mentioned of power failure situations, OTL feels it is vital to state. It is possible that power may be interrupted to the interval data recorder for a limited duration. The Acyuta has a primary backup from a rechargeable nicad battery. During such time, the recorder will continue its normal operation and will log the time and date of power outage. It will also log the power return time and date as well as the duration of outage in minutes whenever the power returns. The Acyuta is designed to continue to operate as usual in this mode. Should the outage extend greater that 30 hours, then the Acyuta will automatically enter into a safe mode and switch to its secondary lithium backup which will maintain the real time clock active and safeguard the data within the RAM for up to 10 years from time of power loss. Once power is restored, it will continue its normal activity.

#### Meter Reporting Schedules and Operational Issues:

The Acyuta can be programmed with a schedule to initiate a call out hourly or once per day or once per week or up to 3 times per week. This parameter can be changed automatically when a meter calls in or by calling the meter.

Each meter will have its pre-specified call out time and / or date. The central station will be tracking daily the sites that should have reported v/s the sites that

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did report. This will enable the IS department to determine if any sites have not reported and take necessary action such as initiating a call to the meter(s). If this is unsuccessful, then a request will be issued to the site contact to investigate further.

It is also important to point out that years of experience in monitoring remote system has allowed OTL to learn and enhance its product line.

Surges are quite common on power lines. They are more intense during a storm. The Acyuta has been designed with automatic resetting fuses so that a service call does not have to be initiated simply to replace a fuse. These auto-resetting fuses go into a high resistive mode upon a surge due to heat build up caused by the surge. This feature limits the current and protects the components. When the fuse cools, it offers low resistance allowing current to flow to the components.

It is also important to note that a surge may not be strong enough to destroy components but, it may be of sufficient strength to cause the microprocessor to stall. OTL has incorporated a watchdog in the Acyuta that will prevent this. If this watchdog is not reset every 100 milliseconds, the system will re-boot.

Sometimes during rainstorms, moisture enters the telephone junction boxes. This leads to corruption in data as it is being transmitted. This can be limited by installing a noise filter that OTL will install at all sites. In addition, the data acquisition protocol utilizes a checksum mechanism to validate that the data acquired is accurate for each interval. If the checksum fails the interval record is requested again.

The above explanation, while lengthy is to expose the experience and enhancements incorporated within our systems to ensure that sufficient safeguards have been adopted so that maintenance issues can be kept to a minimum.

Method of Interface with BOMA members, Data Access and Enhanced Functionality:

Members of the BOMA will be provided with a unique password that will allow them 24-hour direct Internet access to all meters and metered data from our central station. All the following features are available today and can be accessed via our guest site. A password will be required for guest access and will be freely provided to any interested member.

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Each member can have access to only his portfolio of meters and will be able to cross reference any and all his or her metered sites as follows OR each member can share their portfolios with other members including BOMA Atlanta, all of whom will be able to:

- View site information such as address, last call time, meter setup, etc.
- View, chart, customize and save load profiles for any desired period by month, day, hour or interval.
- Aggregate and chart multiple sites in a stacked style within his portfolio.
- Generate bills utilizing the tariff associated to each of his meters with drill down capability to hourly costs.
- Compare optional tariffs that the facility may be eligible for.
- Create and compare specialized tariffs offered by the Utility or energy provider and determine the validity of savings.
- Compare and quantify savings from Real Time Pricing (RTP) type tariff from power exchanges such as California PX versus a multitude of tariffs to weigh risk factors.
- Compare and quantify savings from experimental pilot tariffs involving Customer Base Line (CBL) by time of use that may be offered by the local Utility or energy provider.
- Schedule and automatically receive key e-mail reports.
- Generate e-mail reports on demand and forward them simultaneously to a multitude of people providing enterprise wide reporting.
- Directly download interval, hourly, daily and monthly data to a spreadsheet.
- Upload to our database third party historical interval data.
- View key information such as max/min demand, max/min consumption, average cost of energy, \$/sq. ft., BTU/sq. ft. etc.

Interval Recording Capability and Provision to provide On demand:

The Acyuta can log in intervals of 5, 15, 30, 45 minutes or hourly. This is possible because of the presence of a real time clock (RTC). The RTC tracks the time in hours, minutes, seconds, month, day, year and day of the week. A schedule is uploaded to the meter as to when to log the acquired information. This schedule can be changed automatically on the next call in or by calling the meter. This information is entered into a central database which is "looked up" when a meter calls in.

All meters call out to a central station located in Garfield, NJ. Data is acquired and stored onto a main file server. The file server is networked to an Internet server that is on-line 24 hours a day.

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Ability to organize information in tabular and graphical representation:

OTL's vast experience and continued R&D enables it to provide its clients with cutting-edge technology that supercede the fundamental requirements of the RFP. The attached tabulated tables and graphs have been printed directly via the Internet. This provides the ability to access information on a 24-hour basis by multiple departments and or entities. For example, each building manager will be able to view his facility's energy consumption and profile for one or an aggregate of meters. Similar or enhanced access capabilities can be provided to the energy provider, performance contracting entity and the corporation's internal departments if desired.

Alternative Rate Structure Analysis:

Alternate rate structure analysis is possible via various graphical user interfaces via the Internet. Ad hoc rates can be created on the fly or predefined alternative rates can be used for comparison.

Broad-based Experience:

OTL has a vast portfolio of facilities ranging from manufacturing, distribution, service, restaurant, airport, school districts, Universities, federal, non-profit and state buildings. Below is a limited table of end service points where AMR systems exist.

FACILITY	TYPE	SERVICE
New Jersey Transit	Service	Turn-key
Paramus School District	School	Turn-key
Jersey City School District	School	"
Rutgers University	Educational	"
Fuji Film	Service	" w/ Utility Coordination
Como Textile	Manufacturing	" w/ Utility Coordination
Port Authority of NJ – Newark	Airport	Turn-key

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System Operation and Maintenance Support:

System Operation will be as follows. Each meter has an on board modem for communicating via the telephone network. Each unit will have a pre-specified schedule to initiate a callout to a central station. The central station has two key servers, namely the File server which stores the data to a database and a Web server that is on line with the Internet 24-hours a day. Data upon download is available immediately for preview. Users can access and query one or more meters in their portfolio for data. Graphical presentation of the operation is in Section 4.

It is anticipated that the facility will provide the telephone communications near the existing meter. It is also expected that they will maintain the operation of these telephone lines.

Each facility where an installation is performed will have a site map listing the location of the meter(s). In addition, each facility will have a "Setup" information form. Its function is to clearly identify the existing setup information such as Installation contractor name, meter location, hookup, telephone number, special considerations, etc. that will aid in coordinating the installation and future maintenance of all metered sites.

Meter Access, Software Upgrades, Education and Training:

Fortunately, the mechanism that OTL proposes will only require bare essentials such as a PC with Internet access for any entity to access the main database. OTL will provide the necessary passwords. The Internet access is possible at [www.energytracking.com](http://www.energytracking.com) where a guest site is currently available for preview. Software necessary to access the Internet such as a web browser such as Internet Explorer will be provided by OTL if necessary.

The Internet site is currently active and copies of all current functions are in Section 4. We urge the RFP review committee to access this site to understand the cutting edge technology being proposed. Note: Graphs can be viewed / accessed only via Internet Explorer 4.0.

In addition, if desired, OTL can provide users the ability to access a meter ON DEMAND via the Internet. i.e.; A user can initiate a call out to a specific meter directly from the web site and upload the latest data.

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Education and Training:

OTL will provide all the education and training when or as required and necessary by any participant(s) to perform his or her task(s) by walking them through the site via the Internet. In addition, we will also help setup customized reports to be sent via e-mail if required.

OTL will also provide on line help and written documentation to the members of BOMA describing in detail all aspects of operation of the hardware and software.

In addition, a help desk phone number will be provided for individuals who require one on one explanation or direction. Direct access telephone numbers will be provided to the team leader, Database Administrator (DBA) and system operator(s).

OTL will also post new enhancements to the web site of upcoming or available features or functions.

Currently, OTL is working on the following enhancements and will be providing:

1. *Charting Overlay:*

This feature will enable users to compare information by overlaying historical data to current data or other historical data and view it on a single chart. Its primary goal is to provide a visual cue of the impact of demand side measures and practices.

2. *Rule Based Engine:*

This complex service will allow members to predefine conditions and responses that are to be taken. For example: If my single or multi-site portfolio aggregation demand exceeds 5 MW then initiate an e-mail to the following.

3. *Forecasting / Predictive Capabilities:*

Currently, the load profile charts provided in this proposal display the average consumption point value. We are already providing historical monthly consumption, peak demand and load factor values as reported in the enclosed reports. Our next goal is to provide forecasting values based on average weekday, weekend and holiday historical consumption values. We are currently receiving feedback from our users so that seasonal and process variations can be accounted for whenever data of this type is being analyzed.

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## **ETIcore – Energy Information System Features:**

### **BASIC FEATURES**

ETIcore is a versatile system designed to cater to all of the requirements emerging from a deregulating energy market.

Following are some of the capabilities our clients can utilize with ETIcore:

- Acquire interval data from load monitoring meters located anywhere in the country over telephone or modem communication links
- Store interval data in a state-of-the-art Relational Database Management System
- Obtain rich text tables, reports and charts for any time span via email and/or from an Intranet or Internet site including:
  - Interval (raw) data
  - Daily & hourly load profiles
  - Hourly demand and daily peak demand computation
  - System activity
  - System alarms
  - Interval data validation
  - Load status monitoring
  - Billing
  - Active, reactive energy and power factor analysis
  - Billing comparison of different tariffs
- Perform the following activities from an Intranet or Internet site:
  - Obtain data from specific load monitoring meters on demand
  - Program various parameters of specific load monitoring meters
  - Provide the capability to virtually shed loads in real time at any location
  - Create tariffs for comparison
- Provide GUI and web-based tools for database administration and monitoring
- Provide comprehensive GUI tools for system configuration

### **HARDWARE FEATURES**

The first installation of ETIcore was planned for ETI itself. This system has been in operation at ETI on a 24-hour basis for more than 22 months now. Clients and

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visitors to the ETI web site are currently able to access load-monitoring data on a 24-hour basis.

ETIcore was designed to carry our energy monitoring services far into the millenium. A scalable, distributed system was designed and deployed to supply cost-effective energy monitoring services.

The hardware components of ETIcore are as follows:

- Quad – CPU server with hot pluggable RAID-5 storage – database server (raid has external dual power supply for total redundancy)
- Dual - CPU server with hot pluggable RAID-5 storage – hot-standby for database server
- Pentium workstation with multiple serial communication ports - data acquisition system
- Pentium workstation with multiple serial communication ports – standby data acquisition system
- Pentium server – for administration and configuration tools
- Pentium server – backup for administration and configuration tools
- Pentium server – for hosting multiple web sites and functioning as mail server
- Pentium server – standby for web server
- Intranet – 100 base T Ethernet switch with 10 base T fail-over switch
- Connection to Internet – 1.5 MBPS T1 line with fail-over ISDN line
- Redundant un-interruptible Power Supplies to provide power to system
- Toll free telephone lines for meters to call-in
- Hunt system to handle multiple simultaneous calls via telephone lines

***Timing and other statistical information of ETIcore:***

- Average call duration of a load monitoring meter which uploads data:

*Every hour = 45 seconds*

*Every day = 180 seconds*

**Note: Consumption Only – 30 seconds**

- Recoverable errors in calls from meters which upload data every hour:

*3 per week*

- Irrecoverable errors in calls from meters which upload data every hour, every day :

*None*

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- Data integrity errors after data has been uploaded from meter:

*None*

- Data Loss – *None*

- Average query response time for an hourly load profile over a span of one month:

---

6 seconds (assuming client connects to Internet using a 56k modem and Internet traffic permitting)

---

- Average time taken for an e-mail report to reach destination from time of request:

*30 seconds (Internet traffic permitting)*

- Average time for interval data to become available when a callout is made over the Internet:

---

90 seconds (assuming client connects using a 56k modem and Internet traffic permitting)

---

## **ARCHITECTURAL FEATURES**

### ***Scalable***

ETIcore hardware and software can be configured to provide identical functionality for small, medium and large installation capacities.

Proportional to an end user's application, ETIcore can be deployed on a single server with one to sixteen call-in ports. The database server, tools, Intranet and Internet access can all be provided on the same server.

### ***Expandable***

Although an end user may start with a low-end configuration to cater to their current requirements, ETIcore is designed to provide expandability by adding additional software and hardware components as needed. Such expansion will not affect existing installations or database. Additionally, ETIcore can be expanded horizontally to have multiple data acquisition workstations, a

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centralized or distributed database, and multiple Intranet and Internet servers to provide an installation base extendible to millions of load monitoring meters.

### *State-of-the-Art Technology*

ETIcore has been developed using Microsoft's Network Operating System Windows NT 4.0.

The RDBMS that is the data mine of ETIcore is Microsoft's SQL Server 6.5. The entire software system has been designed using Object Oriented Technology and tools.

Advanced system services such as TAPI, ODBC, NT authentication, Win32 etc., together with cutting edge technologies such as ActiveX, Server-side scripting, ADO, Java VM, and OLE DB, deliver value for investment and guarantee against obsolescence in the near future. Furthermore, all of these technologies are extendible and ETIcore applications can be enhanced to integrate future technologies.

Every software component of ETIcore is fundamentally independent of changes in any or all of the other components and can be replaced, enhanced, or upgraded without affecting system performance.

### *Security*

ETIcore relies on the advanced security provided by Windows NT 4.0. In addition, several layers of checks and alerts within our software protect against unauthorized access to data over the Intranet / Internet. Password protection is an integral feature to ensure permissible access.

## **SOFTWARE FEATURES**

### *Data Acquisition*

ETIcore's data acquisition software is a multithreaded, object-oriented application. It has been designed to handle up to 16 serial communication ports on one workstation.

Multithreading capability allows this software to handle 16 simultaneous data uploads. It uses the DAO 3.5 drivers to access and update the metering database. The software is capable of taking corrective actions in case of communication errors to minimize call duration and number of call-ins from a

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single meter. It can perform user / administrator specified actions when a meter calls in or upon a callout to a meter.

The data acquisition component is also designed to be extendible to incorporate communication protocols for third party meter manufacturers.

### *Database architecture*

The database server used by ETIcore is MS SQL Server 6.5. With its open architecture and the availability of a wide variety of SQL based tools, this database can be accessed and administered by a database administrator using a multitude of third party tools. However, ETIcore provides a browser-based administration tool as well as a Visual Basic / Power Builder front-end for the database.

Designing of the database was done using the state-of-art CASE tool (S-Designer) to provide an optimal and efficient tailor-made design for AMR applications. While the database currently handles only Ohm Tech Labs' product line, it can be enhanced to accept data from third-party load monitoring meters and revenue meters.

Interval data ranging from a 1-minute to a 60-minute resolution from thousands of meters can be stored online for an 18-month duration. Due to the stability of the hard disks operating on a RAID 5 configuration, an incremental backup of the database is made only once a day to tape. All historical interval data (older than 18 months) is archived to tape. A backup of archives and weekly backup tapes are maintained off-site.

The database design is further optimized to provide high-speed results for a wide variety of query combinations specific to metering applications. The database is generic enough for storing and reproducing metering data for energy resources such as electricity, gas, water, oil, steam, etc. In fact, any quantity that can be measured can be stored. The database can accommodate up to 60 channels of information per meter at the current time. However, this number is easily extendable.

A key feature of the database is that it allows customers of ETI to group their meters by:

- Physical Location
- Customer Identity
- Distributor Identity
- Utility Identity
- Any Defined Portfolio
- State

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This helps in better organizing load profiles, bills and other reports that a customer may require.

## **WEB ACCESS FEATURES**

ETIcore incorporates a complete system for creating and deploying a dynamic, interactive site, such as:

- Forms to aid clients in customizing queries
- Real time content
- Rich text reports with dynamic HTML features
- User-programmable load monitoring meters
- Load-shedding capabilities from the Internet to specific meters
- On-demand data retrieval
- Meter installation profiles
- Complete data security (one customer cannot view or access another customer's data)
- Real time interval data presentation in HTML tables, downloadable spreadsheet format files and interactive charts
- Real time billing (Time-Of-Use, Block and Ratchet tariffs) tables, reports and interactive charts
- Real time load profiling and peak demand presentation using dynamic HTML tables, downloadable spreadsheet format files, reports and interactive charts.
- E-mailing reports and tables in rich or plain text, with or without active charts, can be delivered to one or more user accounts at any pre-determined time of the day
- E-mailed reports can be obtained by clients on demand from the Intranet / Internet site at any time for any meter.
- Any type of tariff can be created over the Internet such as Block, Ratchet, Time-of-Use, TOU with CBL and RTP.
- Cross tariff comparison with drill down analysis capability.
- Multiphase charting with active, reactive and power factor.
- \$ per sq. ft., BTU per sq. ft., Average cost of energy.

In order to provide this functionality, the web access components rely on server-side scripting technologies like ASP, CGI and Java. More customized features can easily be added, if and when a client desires.

Energy Tracking Inc.'s advanced technology has come from years of experience in deploying remote meters, processing millions of data records, and keeping an eye on industry trends. We believe our expertise is shown in our products and support capabilities. With in house hardware, software, and firmware specialists, we are ideally positioned to fulfill both your current and future needs.

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### **Hardware Salient Features and Operation:**

**Model(s):** ACYUTA – Measures pulses.  
UVACA – Measures Active and Reactive Energy

**Enclosure:** Each unit is provided in a NEMA 1 enclosure. Specific types such as waterproof enclosures can be provided if required.

**Display:** Each unit has an LCD for viewing local consumption information. This is especially important during installation and testing. An LCD is also desirable if a manual reading has to be performed in the event that communications are temporarily disrupted.

**Environmental:** Units will meet –10 degree Celsius at 99% relative humidity.

**Self-Diagnostic:** Both units have a proven positive track record and is highly reliable based on the state-of-the-art technology. Its features and operation firmware allow it to be an intelligent and sophisticated unit. It performs self-diagnostic on power up and once a day. Diagnostics are performed on the display (continuously), in memory (upon start up), and in the modem (start up and once a day). Therefore, the LCD can be removed at any time and the unit will continue to function without any loss of data or accuracy.

**Watchdog:** In addition to self-diagnostics, each unit has a 'watch-dog' built in. This is a safeguard against surges and spikes that would otherwise disrupt the microprocessor. This watchdog is reset every 100 milliseconds. If this does not occur, the entire unit will reset itself without any loss of data.

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### **Programmability:**

Both units can be programmed remotely or locally. No special programming device is necessary. A push button switch and visual cues from the display screen allow easy programming.

### **Communications:**

Each unit has a built-in modem. Two-way communications are feasible and can be changed at any time. The unit can be programmed for 'Call-Out' only if desired. If the unit is placed in a call-out only mode it will not answer any calls. This is performed by simply setting the number of rings to pick up to a higher number. Access to the remote unit upon demand is still possible if the One-Ring feature is activated as described below.

Each unit has a 'One-Ring' feature. The purpose of this feature is that dedicated telephone lines are not required to access the unit. To use this feature whenever the latest data is required, a call is made to the unit and after the first ring, the call is disconnected. The unit counts the rings and immediately initiates a call out to the Central Station.

All features and programmed parameters can be changed upon demand or whenever a unit calls into the Central Station.

If a unit fails to call out on its first attempt, it will re-try multiple times. The maximum tries are up to 5 times to initiate a call-out. If this fails, it will try again the next day.

It is highly important that the data transmitted over the telephone lines is accurate. Sometimes static can terminate a connection or introduce 'noise' on the line which could lead to data corruption. Each unit has been thoroughly tested under such situations and is safeguarded against data corruption to the highest degree possible. In addition, all information relayed to the central station is in 'packets'. Each 'packet' is accompanied by a checksum to ensure the data validity. The central station software is able to detect any mismatch and then request the information again to ensure superior error handling and data validity. This allows superior error

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handling and guarantees data validity. It allows automatic recovery even if communications are terminated abruptly.

### **Call Handling and Scheduling:**

All Call scheduling and handling is performed by our sophisticated 'Call Management Module' (CMM).

Operation parameters and call in schedules need to be programmed for each unit. While certain parameters will be similar for a majority of meters, each meter will still require a unique call in time schedule. To manually program or change hundreds or thousands of schedules would be time consuming and tedious. The CMM can automatically schedule all identified remote meters based on parameters entered by the System Administrator.

### **Parameters:**

The parameters that can be performed by the meter and central station are broken down into four main areas.

1. Schedule Parameters
2. Acquisition Parameters
3. Meter Parameters
4. Update & Processing Parameters

#### **Schedule Parameters:**

- Rings to Pickup – The unit will pick up the telephone line based on the entered number. Normally, if two-way communications are required, this value is set to one '1'. If the telephone line is being shared, this can be set as high as 15 so that the unit will never pick up the line.
- Log Interval – Both units are interval data recorders. Units have a real time clock (RTC) on board, which allows them to log the consumption information on a predefined interval. Under conditions where only total consumption is required, this feature can be turned off. However, it is capable of logging every 1, 5, 15, 30, or 45 minutes, hourly, daily, weekly or monthly. In other words, total consumption for each day for every meter can be easily acquired for analysis and planning. This feature can also be turned off so that only consumption is reported.

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- **Call-Out Time** – Each unit can be programmed to call-out at a specific time defined in hours and minutes. The lowest granularity of the call out time is one minute so that calls can be received every minute on each port at the central station. Please note that the number of ports being provided is sixteen, (easily expandable). This will allow 16 calls to be received by the central station every minute. This will allow 960 meter reads to be performed every hour. More details will be provided in the "System Architecture" section of this proposal
- **Call-Out Days** – Each unit can be programmed to call out on specific days of the week such as Sunday, Monday, Tuesday, etc.
- **Call-Out Periodicity** – Each unit can be programmed to initiate a call-out every hour, daily, weekly or up to three times a week. If a call-out is required only once a month on a specific date of the month, then we hereby commit to provide this capability.

#### **Acquisition Parameters:**

- **Acquire Schedule** – This allows the central station to acquire and / or confirm the call-out and log parameters.
- **Acquire Interval Readings** – This allows 15 minute or hourly or daily interval readings to be acquired.
- **Acquire Cumulative Reading** – This allows acquisition of the total consumption since the last meter reading to be acquired.
- **Acquire Counter Readings** - This allows acquisition of the total consumption since the meter was installed.

#### **Program Parameters:**

- **Central Station Telephone number** – This allows setting of the telephone number that the unit will call. This can be changed upon call-in if desired. Currently, only one telephone number can be programmed since most Central Stations are on a Hunt / Rollover System which automatically switches the incoming call to the next available line if the line is busy.
- **Meter ID** – Each meter must have a unique meter identifier. Currently, it is up to six digits (999999). This can be increased if required. The System Administrator has the ability to modify this Meter ID if necessary.

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- **One Ring Call-Out** – This feature is designed to allow telephone lines to be shared. A dedicated telephone line is not required. When a telephone line is shared, the unit will not pickup the line. The way this feature works is by counting the number of rings. If and only if a single ring is received will the unit initiate a call-out to the central station. This allows getting on demand meter readings from units that are not on a dedicated telephone line.
- **Synchronize Time** – Each unit has a real time clock (RTC) integrated in its design. This (RTC) allows it to determine when to initiate a call to the central station. It also allows various other functions such as time stamping interval records, power loss, etc. Since the RTC is crystal based, it can loose up to 30 seconds per month. This feature allows the time on the unit to be synchronized with the time on the Central Station PC.

#### **Update & Processing Parameters:**

These parameters refer to processing the information after each unit has called in and downloaded the meter readings.

- **Update Call Log** – Each incoming and outgoing call is time stamped and logs the meter id, duration of call, and call status such as success or failure.
- **Update Call Parameters** – This feature updates the database based on any updates selected for any meter during a call-in or call-out. This allows tracking of on going operations and prevents duplication of task(s).
- **Perform VEE** – The Validation, Estimation and Editing (VEE) feature performs a check on the data during each call. The validation and estimation values can be predefined or based on historical data. The System Administrator can then perform any editing that needs to be done to check for the following:
  1. Time check of meter reading device/system (Time check of Central Station system)
  2. Time check of meter
  3. Pulse overflow check
  4. Sum check
  5. Spike check
  6. High/Low usage check
  7. High/Low demand check
  8. Zero consumption of active meters / channels
  9. Non-zero consumption of inactive meters / channels

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- **Do Hourly Aggregation** – This feature is definitely used when electricity is monitored. Normally, consumption data is collected every 15 minutes and logged. Hourly Aggregation feature will cumulate the interval data to an hourly value, compute the peak demand and store it in the database. This is done on the fly when a meter calls in.
- **Do Hourly Billing** – This feature is very important when electricity is monitored. Billing can be performed on a multitude of tariff types such as block, ratchet, TOU / TOD, RTP, etc. This feature calculates the billing for every hours' usage. This is done on the fly when a meter calls in.

**Counter Preset** – This is a very important and advantageous feature. Each meter has a visual dial or counter. When an AMR device is installed then at that time the counter value in the AMR unit must be matched with the readings on the utility meter. This also allows manual verification during quality control and testing that the reading on the utility meter and the readings on the AMR unit match 100%. Please note that only the ACYUTA and UVACA models have this counter feature.

### **Invoicing:**

- **Invoice checking** – We have a very sophisticated billing engine that can handle simple to complex invoicing options. We can accommodate flat rates, block/ratchet rates, time of use rates, tariffs based on customer base line and RTP. These rates can vary by month, season, year, etc. A sub component module allows for the calculation of \$ cost per widget. These capabilities are demonstrated in the ETIcore software sample output pages in the Section 4.

### **Installation:**

The installation of the unit is easy and straightforward. The AMR unit can be installed near the meter or where telephone access and 110 AC power is available. The pulse output is connected to the AMR unit from the meter and the telephone line is connected to meter. Installer notifies Central station, who then calls and programs the meter information. The unit could also be pre-configured and a call out could be initiated from the remote site to the central station to confirm proper operation.

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### Summary:

Presented below is a tabular summary indicating the highlights and benefits of the system being proposed.

Requirements	Yes/No	Description
Accurate meter Readings	Y	The Acyuta AMR can accurately log 1000 pulses per second. The Uvaca model can measure both active and reactive energy.
No need for various validation procedures	Y	Any validation standard required can be performed during download / bill generation. <u>The data transmitted is error checked for accuracy and completeness.</u>
Timely information	Y	Units automatically call out based on pre-programmed schedules. Units can also be called on demand when desired from the internet/intranet.
Most cost effective resource utilization	Y	The entire system is highly automated, thus maximizing user resources and minimizing human interaction.
Better tracking Facilities	Y	In addition to providing Total Consumption, the Acyuta AMR time and date stamps the reading in user defined intervals 5, 10, 15, 30, or hourly intervals. Allows a load profile to be generated pinpointing usage periods and also provides a verification of conservation efforts.
Enhance Corporate Image / Enterprise-wide Reporting	Y	The system is highly automated, allowing enterprise wide reporting and access to multiple sites and resources. Users will be able to view, chart, and download their usage. Anticipated bill information and historical consumption and many additional features such as

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		automatic e-mail with charts, RTP actual and simulation are feasible providing value to multiple departments from energy managers to budgeting and accounting.
Invoice Checking and Tracking	Y	The Acyuta would be a revenue grade metering unit and will not miss any pulse information in all modes of operation. The Acyuta's accuracy is dependant on the existing accuracy of the Utility meter itself. Our billing module will confirm the accuracy of the Utility bill.
Better consumption analysis tools	Y	Load Profile data as well as optimized internet/intranet software modules offer the latest in technology and analysis.
Internet Access	Y	Provides 24X7 ability to view all information such as consumption, billing, tariffs, historical usage, usage to date, etc. to multiple departments via the Internet.

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### **Qualifications and Experience:**

OTL has successfully provided turnkey projects to some of the most renowned entities throughout the USA. We have listed the contacts in the references section. Our accomplishments have given us experience in metering a host of energy resources and analog parameters such as kW, kWh, steam, flow, temperature, humidity, runtime, etc.

➤ **Standard Offer by PSE&G:**

This was a Utility DSM program for which we constructed and monitoring over 650 sites with over 10,000 metering points.

➤ **Bright Investment:**

This is a project for which we provided data processing services for over 500 meters (6000+ points) and generated invoices to the Utility.

➤ **Chiller and Boiler Plant:**

This project was assigned to us by DukeSolutions, a subsidiary of Duke Power.

### **Senior Team Leader:**

The Senior team leader appointed will be Mr. Charles Hall, P.E. who has over 25 years of experience in the energy industry. His bio data is included for your perusal.

### **Project Management:**

Mr. Ron Walsh – Director of Operations at OTL has over 18 years experience in the energy industry and will coordinate all construction issues with the site contacts and local Utilities if required. He has handled hundreds of projects providing vast experience in metering and sub metering. These areas typically have been power measurement, lighting, motors, VFD's, chillers, HVAC plants and fuel switching.

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**CHAS ANDERS HALL, PE CEM  
OVERVIEW OF PROJECT CREDENTIALS: PAGE ONE**

1. **Contract PS 00492 with New York State Office of General Service for Utilities & Fuel Audits** of all state owned facilities. Worked with Accurate Energy Group on assembling successful bid, negotiating contract, formatting database and rate and energy analysis software.
2. **Contract C – 36481 with County of Nassau** for utility audit & of County buildings. Worked with Accurate Energy Group on assembling bid, negotiating contract, formatting database and rate and energy analysis software. Contract recovered over 2.5 million dollars in incorrect LILCO/LIPA building errors and incorrect rate assignment.
3. **National Broadcasting Company:** Various projects summarized as follows:  
(a) Maintenance & monthly review of wheeled electric charges from New York Power Authority including forecasting & power nominations. (b) Provided detailed survey facility to determine production versus administrative usage for determining manufacturers sales tax exemptions for New York State Department of Taxation & Finance study. (c) Provided life cycle costing and analysis of electric distribution system and conversion to High Tension electric service study supply.
4. **Hunts Point Cooperative Market** – Technical analysis and economic feasibility study conducted with New York Power Authority and New York City Public Utility Service for pilot Demand Side Management Power for chiller plant for 35 acre refrigeration facility.
5. Provide load analysis and rate modeling for various clients for participation and inclusion in NYPA Economic Development Power Allocations. Assisted and provided analysis and submission for **Eagle Electric Manufacturing Company** as first customer included in NYPA's deep discount program providing ICIP benefits and NYPA power allocations.
6. Energy conservation program development and implementation for **Solow Properties** at 9 West 57<sup>th</sup> Street (1.1mm sq. ft.) and **Galbreath Properties** at 14 Wall Street (750 m sq. ft.) as well as **Novotel Hotel** and **Sofatel Hotel** chain, **Banker Trust** at numerous locations, **Columbia Greene Community College**, **Hudson Valley Community College**, **Union College**, **Cambridge School District** (Cambridge, NY) **Elmira Heights School District** (Elmira, NY) **Rockland, NY**).

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7. Chilled Water feasibility studies and optimization programs for 250 Park Avenue (ABR), 220 East 42<sup>nd</sup> Street (LaSalle Properties), 530 Fifth Avenue (Silverstein Properties), 1211 Sixth Avenue (JMB Realty), 1166 Sixth Avenue (Cushman & Wakefield), Citicorp. Center, Queens, Sealand Industries (NJ), Colorite Plastics (NJ), and numerous others.
8. Energy performance studies and program development for 1330 Sixth Avenue (Shuwa Properties), 1211 Sixth Avenue (JMB Realty), Marriot Hotels (Newark, Marquis, Financial Center, Eastside and Glenpoint, NJ) 150 East 42<sup>nd</sup> Street (GE), UN Plaza, NYC (Cushman & Wakefield).
9. Managed the evaluation, analysis, and implementation of *lighting retrofits* in over 20 million square feet of office and manufacturing space in the metropolitan New York area.
10. Developed Energy Conservation in Municipal Wastewater Plants Workbook and state wide seminar series (1) for the **State of New York Energy Office**. Principal author and seminar presenter. Also accomplished similar programs for the **State of New Jersey** and **State of Maryland**.
11. Geothermal Energy Research, Lebanon Springs, New York for the **New York State Energy Research and Development Authority**. Principal researcher for well development and distribution of geothermal energy to local school and government facilities. Accomplished in conjunction with Dunn Geoscience, Albany, NY. Also was consultant to **NYSERDA** for the **Coal Research Facility** at GE in Malta, NY.
12. **Energy Audit Training Seminars – Schools and Hospitals Program** for the **New York State Energy Office**. Developed workbook and presentations materials for state wide seminars series.
13. Project initiation, feasibility studies, investment proformas and project management for 100 MW cogeneration facility at **Nestle'** in freehold, NJ, 120 MW cogeneration facility at **Nestle'** in Fulton, NY, 10 MW total energy plant at **International Crossroads** in Mahwah, NJ , 3.5 cogeneration facility at **Coke Cola** at Elmford, NY.
14. Value engineering for **Resorts International** and **Taj Mahal** or 450 million dollars mechanical/electrical project size.
15. Chilled water retrofit programs for **Dunes Hotel and Casino** (3500 tons) and **Durst Properties** at 201/205 East 42<sup>nd</sup> Street, New York City.

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16. Variable frequency drives programs for **Durst Properties** at 201 & 205 East 42<sup>nd</sup> Street, 200 East 42<sup>nd</sup> Street, 733 Third Avenue, and 1155 Sixth Avenue, New York City. Additional variable frequency drives programs resulted in installation of over 1000 variable frequency drives in office buildings, high rise residential, institutional, and industrial properties.
19. Coal to Gas Conversion/Plant Lighting program for **AC Automotive** (Rochester, NY) combined with a demand side management program for **EG&E** (Rochester).
20. Photovoltaic Analysis and Implementation Study for **Citibank (NYC)** and **Cushman & Wakefield**.
21. Peak Shaving analysis (2500kW) for 1500 Market St. (Philadelphia, PA) for **Galbreath Properties**, including utility interface and rate negotiations (PECO).
22. Central Plant Operational Analysis for energy conversation at **CBS** in NYC.
23. Ice Storage Analysis and Study for **Frank B. Hall Insurance office complex** in Briarcliff, NY including application for special utility rate.
24. Solar Heated Bus Garage and Maintenance Facility, Amsterdam, NY. Feasibility analysis, design and construction management. Project was awarded national honor from the federal Urban Mass Transit Authority.
25. Boiler retrofit and combustion efficiency improvement for **Mohasco Corp.** (Dublin, GA and Dillion, SC), **Union College** (Schenectady, NY), **Albany Felt Co.**, (Albany, NY) **Imperial Paper** (Plattsburg, NY), **Pine Haven Nursing Home** (Coxsackie, NY) **Mohonasen High School** (Schednectady, NY).

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*Following are some of Ohm Tech Labs' references:*

**New Energy Ventures, Inc.**

Mr. David McGeown  
Director of Energy Services  
Tel. #: 908-704-8437

**ERI Services, Inc.**

Mr. Chris Hainsworth  
Senior Project Engineer  
Tel. #: 215-887-7100

**Central Hudson Enterprises Corp.**

Mr. Craig Rebecca  
Project Manager  
Tel. #: 914-485-5770

**OnSite Sycom**

Mr. David Klockner  
Senior Project Manager  
Tel. #: 732-748-9600

**Duke Solutions**

Mr. Robert Payne  
General Manager  
Tel. #: 704-382-3244

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### **Scheduling:**

Initially, we will make a presentation at a BOMA meeting to members, explaining the program, benefits, ease of entry into the program, and time period.

We, in conjunction with BOMA administration, will follow up with a well crafted mailing, reiterating all the high points and direct benefits to becoming enrolled in the program.

Subsequent to which the following method of operation will be:

1. BOMA member will contact OTL to initiate the metering. This request can be made directly from the Energy Tracking's web site.
2. OTL will contact the member and coordinate the installation at the facility. Depending on the type of installation, either the local utility will have to be contacted for a pulse output or the main feed's draw will have to be determined to size the CT's.
3. An installation crew will be sent at a predetermined time and date to initiate the install. It would be greatly beneficial if the member could arrange for a 120 VAC outlet and a telephone line within a reasonable distance of the meter(s). The time lag from the customers' first request to the actual installation will be less than 10 business days.
4. The site is automatically activated when the meter first calls in.
5. The ETI core system administrator will add the meter to the appropriate domain. Data for the facility will be available thereafter.

### **Pricing For the BOMA Atlanta Proposal**

#### **Special Incentive(s) to BOMA members:**

All members of BOMA Atlanta will be provided access to ALL features of ETIcore at no further cost.

Due to the lack of "to scale" drawings and other information the turnkey installation has been broken out in three categories:

- Equipment and Pre-Fabrication (If necessary)
- Labor
- Extra's and Travel/Expenses

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### Equipment Sale and Turn-key Install for simple pulse pickup:

Quantity	Description	Unit \$	Extended \$
1	Aycuta Pulse	\$350.00	\$350.00
1	Surge Strips	\$30.00	\$30.00
1	Pre-Fab Labor	\$50.00	\$50.00
1	Misc. Electrical	\$30.00	\$30.00
1	Setup Fee	\$50.00	\$50.00
Equipment Total:			\$510.00

### Labor:

Quantity	Description	Unit \$	Extended \$
1	Labor **	\$600.00	\$600.00

\*\* This labor charge includes:

1. Pulling phone line over to board location (Max 50')
2. Mounting pre-fab board to wall
3. Running 120-volt circuit to board (Max 30')

### Notes:

1. Running of cable in EMT from meters to DAQ board will at \$7.00/foot additional.
2. Maximum working height will be 12' without additional charge
3. Phone line with dial tone and the ability to call area code "973" and the costs associated to be paid by host
4. Host to provide access to the facility between the hours of 7:00 AM and 5:00 PM Monday thru Friday excluding any holidays
5. If access needs to be outside the above time frame then billing rate will be 1.5 times standard rate for labor.
6. When at all possible, Ohm Tech Labs, Inc. will use local contractors to promote harmony in the community that BOMA and its members serve

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### Extra's

1. If the host utility requires Isolation Relays be installed by us an additional charge of \$250.00 per meter plus the cost of any materials used
2. All costs associated with providing the pulse output from the existing meters will be billed at Cost plus 15% Admin Fee
3. Air Fare – Coach Cost plus 15% Admin Fee
4. Hotel – Capped at \$125.00 per night plus 15% Admin Fee
5. Meals – Capped at 40.00 per day plus 15% Admin Fee
6. Car Rental – Economy Cost plus 15% Admin Fee
7. Management Fee - \$250.00 per day

### **Service Charges:**

Internet Data Services at \$1.00 per Meter per Day

### **Sub-Metering and Process Monitoring Products:**

1. Analog Board - \$650.00 ea.
2. Acyuta Pulse Recorder - \$ 350.00
3. Uvaca Power Recorder
  - a. 4 to 20mA only - \$ 450.00 ea. plus C.T.'s
  - b. Active/Reactive Energy - \$ 650.00 ea. plus C.T.'s
  - c. Active/Reactive Energy & 3 Pulse Inputs - \$ 850.00 ea. plus C.T.'s

Note: For such types of installations CT's will be required. A PT will only be required if the service voltage is greater than 480 VAC.



**From:** Lieberman, Jerry <jlieberman@newenergy.com>  
**To:** McGeown, David <dmcgeown@newenergy.com>; Wasilewski, Ed  
<EWASILEWSKI@newenergy.com>; Singer, Andrew  
<ASINGER@newenergy.com>  
**Cc:** 'kmistry@energytracking.com' <kmistry@energytracking.com>  
**Date:** Wednesday, July 07, 1999 5:00 PM  
**Subject:** RE: TZh energy customer information system

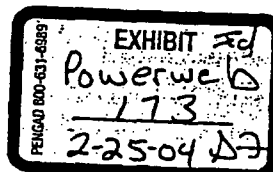
---

David, thanks for a great piece of timely work. We will cover all of the costs because it is a very cost effective way of having a live demo site in Manhattan. Can we please proceed as quickly as possible to make this happen. I would like to get back to Steve Friedlicht and Jerry Schumm with a schedule.

> —Original Message—

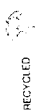
> From: McGeown, David  
> Sent: Friday, July 02, 1999 4:37 PM  
> To: Wasilewski, Ed; Singer, Andrew  
> Cc: Lieberman, Jerry; 'kmistry@energytracking.com'  
> Subject: TZh energy customer information system  
>  
>  
> Attached first draft proposal as promised.  
>  
> Pls review and approve.  
>  
> Decisions to be made:  
>  
> Do we cover all of the costs? For how long?  
>  
> Do we let TZh pay for the ConEd meter changes that will be needed?  
>  
> << File: tzhweb.doc >>  
>  
>  
> David McGeown  
> New Energy Ventures  
> 908 704 8437  
>

7/9/99



ETI 001032

Exhibit D



09/29/1999 18:07 1201-340-2469

OHM TECH LABS, INC.

PAGE 01

OhmTech Labs

141 Lanza Ave. Bldg 12 Garfield, NJ 07026

**FAX**Date: Sept 29<sup>th</sup> 99  
Pages: 3To: Andrew Singer  
Phone: \_\_\_\_\_  
Fax: 415-395-7891  
CC: \_\_\_\_\_From: Little, Misty  
Phone: 973-340-0979  
Fax: 973-340-2469

REMARKS:

☒ Urgent☒ For your review☒ Reply ASAP☐ Please commentConfidentialPlease confirm receipt**DEPOSITION  
EXHIBIT**PLU 112  
BDE 2/11/04VISIT OUR WEBSITE AT <http://www.ohmtechlabs.com>  
SEE YOUR INFORMATION AT <http://www.energytracking.com>

OHM TECH LABS OFFERS:

REVENUE GRADE TRUE POWER LOGGERS; AUTOMATIC METER  
READING UNITS; DIGITAL ANALOG & PULSE LOGGERS;  
DATA MONITORING, ANALYSIS, LOAD PROFILING AND BILLING SERVICES.CONFIDENTIAL -  
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ONLY

NE005654

OTL  
OHM TECH LABS INC.

141 LANZA AVENUE, BLDG. 12/3, GARFIELD, NJ 07026 (973) 340-0979 FAX (973) 340-2469

September 29, 1999

- New invest in E.T.

Mr. Andrew M. Singer  
New Energy, Inc.  
1000 Wilshire Boulevard  
Suite 1900  
Los Angeles, CA 900017-2462

Dear Mr. Singer:

This letter is in response to your inquiries regarding a possible investment by New Energy, Inc. ("New Energy") in Ohm Tech Labs, Inc. ("Ohm Tech"). The shareholders and management of Ohm Tech is prepared to consider such an investment on the following terms:

1. New Energy would receive shares of common stock equal to four percent (4%) of the outstanding common stock of Ohm Tech for a purchase price of \$1,000,000, not to exceed an aggregate investment by New Energy of \$10,000,000 for the purchase of forty percent (40%) of the outstanding common stock.
2. New Energy, so long as a minimum of 4% of the outstanding common stock was purchased, would receive the right to nominate and elect a director to the Board of Directors consisting of four directors.
3. New Energy will receive a limited license to use the intellectual property developed by Ohm Tech. The intention of the use of such technology would be to complement ETI and Ohm Tech's respective technologies with New Energy's present technology to attain a stronger market position. New Energy will receive, through the limited license granted by Ohm Tech of Ohm Tech's intellectual property, the ability (i) for direct access to ETI's database for information transfer, update and/or mining; (ii) to access information regarding current and near future projects (for internal use only); and (iii) to design custom development support and enhancements through Ohm Tech's hardware and software departments. New Energy will be prohibited from using Ohm Tech's technology to compete with ETI or Ohm Tech and will not be permitted to sublicense the technology to any party. All proprietary rights in the technology will remain, at all times, with Ohm Tech.

Complete?  
- sublicense  
- prop. rts.?

What  
about joint results?

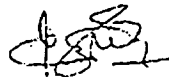
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NE005655

This letter is a preliminary proposal in an effort to commence negotiations and is not binding on Ohm Tech unless and until a formal agreement containing such representations, warranties, covenants, conditions, indemnification and other terms as are customary or appropriate for a transaction of this type, acceptable to Ohm Tech, New Energy and their respective counsel, is executed. It is understood that this letter merely constitutes a statement of our present proposal and does not contain all matters upon which agreement must be reached for a transaction to be consummated.

If you are interested in pursuing negotiations on the basis set forth above, please contact me. We look forward to proceeding expeditiously with New Energy toward an exciting and rewarding future for both parties.

Very truly yours,

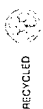


Ketan Mistry  
President

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NE005656

Exhibit E





newenergy

KEITH,

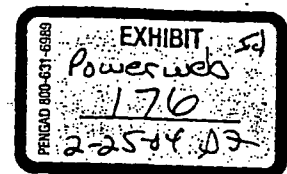
3/2/00

Here's the fully signed  
term sheet. We are doing  
rev's to the agreement & will  
send out ASAP.

Look forward to  
working with you!

Regards

Andy



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ETI 000482

Version 2/18/00rev 1

## NEWENERGY—ENERGY TRACKING TERM SHEET

NewEnergy, Inc., a Delaware corporation with offices at 1333 North California Boulevard, Suite 470, Walnut Creek, CA 94596 and Energy Tracking Inc., a New Jersey corporation with offices at 141 Lanza Avenue, Building 12, Garfield, NJ 07026.

The parties contemplate entering into a definitive agreement whereby ETI would assist NE in developing and deploying a Web-based application that would enable NE's customers to access energy usage and cost data. Also, ETI would provide meters to certain of NE's customers, which would be covered under a separate agreement. The work would be accomplished in two phases. In the first phase, ETI would provide its "Core" web system as a service bureau to NE, and NE would enhance "Core" with NE-specified features, look, feel and navigation (the "Improvements"). Also during Phase 1, NE would establish a server system to host this software, and ETI would assist NE in the transition of the enhanced Core software to this system before the end of Phase 1.

Upon successful conclusion of Phase 1, Phase 2 would commence where ETI licenses, upgrades, services, backs-up and supports the Improved Core software hosted by NE. ETI would be paid license fees for its Core product during Phase 1, and if the Improved Core is successfully implemented on NE's host, ETI would be paid license fees during Phase 2. Also in Phase 2, NE and ETI could jointly develop additional functionality and software tools that may include applications beyond the scope of the Improved Core (for example, behind-the-meter or non-energy uses of Instant Messaging). Such additional work in Phase 2 would be covered in a separate agreement.

The parties would negotiate an agreement that protects ETI's intellectual property in Core, and that includes NE's exclusive ownership of the Improvements with a license back to ETI to commercially exploit the Improvements on a non-exclusive basis within an agreed-upon field of use; and that ETI would pay NE royalties for the grant of that license. This Term Sheet, and the first definitive agreement, would address the terms and conditions for Phases 1 and 2. NE and ETI will work in good faith to craft a definitive agreement as soon as possible after these terms are agreed to. This Term Sheet shall be binding absent a definitive agreement.

Issue	Terms
Type of agreement	Internet development and services agreement
Term for Phase 1	Starts: February 21, 2000  Concludes: November 21, 2000: 9 months duration.
Term for Phase 2	Upon successful conclusion of Phase 1, Phase 2 license for software and services provided by ETI lasts 28 months (three years from definitive agreement date) and may be terminated upon mutual consent.
Termination	Upon termination, to enable NE's continued web services to its customers, ETI or its successors will make its technology available to NE at the \$20 to \$31 per meter per month prices listed in "compensation" with no further services from ETI for the remainder of the Agreement. ETI will place its Core source code, including all improvements & modifications over the term of Phase 1 and Phase 2, in an escrow account at NE's expense. NE's gets source code should ETI declare bankruptcy or cease operations. NE reclaims server hardware paid for by NE and located at ETI facilities upon termination.

WJ 3/27/2K xhl

Attachment A

Page 1 of 3

ETI Terms 1-24-00

WJ 4/4

New Energy Customer Web Services					
Product Requirements Matrix Rev 4.2 01-14-00			Basic	Basic	Premium
Recommended Product Release Features & Timing			WJ 2.1	WJ 2.2	WJ3.0
Item	Category	Requirement	2/15/00	3/31/00	2/15/00
		New requirement since Ver 3			
		ETI likely source			
1	Consumption				
1.1	Consumption	kW demand <i>[load factor]</i>	+	+	+
			Graphs, National	Billing	Graphs, National
1.2	Consumption	kWh energy	+	+	+
1.3	Consumption	kVAR reactive demand			
1.4	Consumption	kVARh reactive energy			
1.5	Consumption	Power factor			
1.6	Consumption	Gas: Btu; Btu/Hour			
1.7	Consumption	Steam: lb; lb/hour			
1.8	Consumption	Chilled/Hot water: Btu			
2	Reporting				
2.1	Reporting	Electric data at 15-minute intervals <i>minor final tuning / 4-2000</i>	+	+	+
2.2	Reporting	Customer defined: Daily; weekly; monthly; UDC bill cycle; yearly; YTD	+	+	+
			Manual spec. & selection of date cycle in pull down.		Manual spec. & selection of date cycle in pull down.
2.3	Reporting	By TOU or RTP tier. Highlight and/or group by tariff-defined blocks (ie visually separates kWh into peak, part peak and off-peak groupings) <i>WJ 3/27/2K Sp Change</i>			+
2.4	Reporting	High/low values in period highlighted	+	+	+
			Measured kW in reports & graphs		
2.5.1	Reporting	Of data uploaded daily <i>ETI/NE</i>	+	+	+
2.5	Reporting	Of data uploaded hourly <i>ETI → final inc on line 8</i>			+
2.6	Reporting	Of data uploaded every 15 minutes <i>CMER reports daily</i>			+
					Need for Alarms, MDMA ready in 3/00
2.7	Reporting	On-demand meter reads <i>ETI</i>			
2.8	Reporting	Clustering/aggregating meters	+	+	+
			Default clustering	<i>ie. by Portfolio</i>	Default clustering
2.8.1	Reporting	Aliasing -- ability to replace meter numbers in file tree with customer-defined names.			
2.9	Reporting	Spreadsheet download	+	+	+
2.10	Reporting	Charting package	+	+	+

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ETI 000484

Attachment A

Page 2 of 3

ETI Terms 1-24-00

New Energy Customer Web Services					
Product Requirements Matrix Rev 4.2 01-14-00			Basic	Basic	Premium
Recommended Product Release Features & Timing			WJ 2.1	WJ 2.2	WJ3.0
Item	Category	Requirement	2/15/00	3/31/00	2/15/00
2.11	Reporting	User-defined custom reports: where the customer selects from a list of template reports or constructs own format	+	+	+
			Limit 2 meters in one view	Limit 2 meters in one view	Multiple meter viewing
2.12	Reporting	NE-created custom reports: we create custom reports at customer's request			
2.13	Reporting	Available by fax if requested			
2.14	Reporting	Save chart views	+	+	+
			Limited memory	Limited memory	Limited memory
3	History				
3.1	History	Historical data: up to 1 year via DASR	+	+	+
3.2	History	Historical data: over 1 years			
3.3	History	Historical data: manual entry by customer for benchmarking (like tons of product; sq ft)			
3.4	History	Historical data: manual entry by NE			
4	Alarms				
4.1	Alarms	User-defined on consumption items in #1			+
4.2	Alarms	User-defined on financial items in #5			+
4.3	Alarms	On Behind the meter systems; normalized by weather or other factors			
4.4	Alarms	Notification by Pager; Email; Fax			+
4.5	Alarms	Log of alarms: history & status			+
5	Financial				
5.1	Financial	Invoice in hardcopy for customer A/P via print out from web; "pdf" files	+	+	+
5.2	Financial	"Drill down" of each invoice line item for justification: demand, energy, T&D, CTC, etc charges. Show image of UDC's bill. Show cost build-up from tariff info including usage (kW, kWh, kVar) in period (TOU period, hour) and charge per unit for period (ra		+	
				CA; only for bills after WJ 2.2 release date	
5.3	Financial	Clear & concise explanation of savings due to NE		+	
5.4	Financial	Estimation of invoice based on customer-specified period rather than UDC's cycle			
5.5	Financial	Bill auditing: confirms that UDC & ESP charges are correct			
5.6	Financial	Market price data: day ahead; hour ahead; ISO imbalance			
5.7	Financial	Price Indices		+	
			CalPX Meter Retail Indices		CalPX Meter Retail Indices
5.8	Financial	Create & Edit Tariffs			
6	Access				

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 ETI 000485

Attachment A

Page 3 of 3

ETI Terms 1-24-00

New Energy Customer Web Services			Basic	Basic	Premium
Product Requirements Matrix Rev 4.2 01-14-00			WJ 2.1	WJ 2.2	WJ3.0
Recommended Product Release Features & Timing			2/15/00	3/31/00	2/15/00
Item	Category	Requirement			
✓ 6.1	Access	Assign passwords	+	+	+
✓ 6.2	Access	Assign access rights by customer's specification (corp, regional, finance, facilities, owner, franchisee)	+	+	+
✓ 6.3	Access	Assign destinations for reports and alarms	+	+	
✓ 6.4	Access	Log On Page	+	+	+
7	Scenarios				
7.1	Scenarios	Cost impact: Shifting load off-peak			+
7.2	Scenarios	Cost impact: Shifting to different UDC tariff, same location			
7.3	Scenarios	Cost impact: Moving usage to new territory or new provider			
7.4	Scenarios	Cost impact: Aggregating customer meters, sites, timespans; conjunctive billing			
7.5	Scenarios	Forecasting consumption values			
7.6	Scenarios	Forecasting financial values			
8	Benchmarking				
8.1	Benchmarking	With other companies in same industry			+
8.2	Benchmarking	With other sites of the customer			+
8.3	Benchmarking	With other behind-the-meter systems			+
8.4	Benchmarking	By financial value per customer-provided measure (ie demand charge per ton cast metal)			+
8.5	Benchmarking	By consumption value per customer-provided measure (ie kWh per square foot)			+
9	Interoperability				
9.1	Interoperability	Minimize customer firewall problems	+	+	+
9.2	Interoperability	Does not require the latest PC or web browser technology	+	+	+
9.3	Interoperability	Can draw from multiple sources of consumption data – different MDMAs		+	
9.4	Interoperability	Can be built from multiple web vendor systems		+	
9.5	Interoperability	Demand-side controls; link to other EMS			
10	Packaging				
10.1	Packaging	Introduction & Message Page	+	+	+
10.2	Packaging	Help text & contact NE help desk; Help needs to include explanation of NE invoice and how to physically read the Vectron meter (what the screens mean).		+	+

*Internal Data Find Table*

- INT DATA Name: -
- INT DATA - FROM: -
- INT DATA - TO: -

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ETI 000486

Exhibit F

RECYCLED

**From:** kmistry <kmistry@energytracking.com>  
**To:** kmurthy@energytracking.com <kmurthy@energytracking.com>  
**Date:** Wednesday, July 26, 2000 1:37 PM  
**Subject:** Fw: WebJoules updates

---

—Original Message—

**From:** Robert Morgan <rmorgan@newenergy.com>  
**To:** kmistry@energytracking.com <kmistry@energytracking.com>  
**Cc:** dmcgeown@newenergy.com <dmcgeown@newenergy.com>  
**Date:** Tuesday, July 25, 2000 7:45 PM  
**Subject:** WebJoules updates

>Hi Keith,

>Thanks for the letter from Howard. I am still digesting and thinking and  
 >will respond ASAP - hopefully tomorrow.

>In the meantime, I would like for us also to continue with the features we  
 >have discussed for WebJoules and will try my best to put the  
 >"requirements" into words:

>1. Weather Data

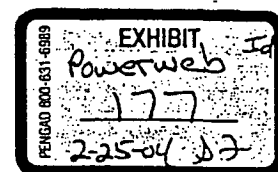
>We would like to be able to show hourly weather data, just like we do the  
 >Cal-PX. The questions that we need to answer are:  
 >What data is available?  
 >Given the data available, do we want to show actuals versus historicals?  
 >Degree days? My preference is hourly actuals with average available.  
 >How do we localize or regionalize the data into zones? We need to do  
 >this on some meaningful basis.  
 >Who designates customers into zones? We would need a field for this and  
 >I propose that BDM's be required to log-in and administer their accounts.

>2. Budget Tracking

>We would like to be able to let customers enter their month-by-month  
 >budget so they can compare "actual" electricity (+gas) expenses vs. their  
 >budget.  
 >1. What if the customer wants to put in his annual or quarterly number?  
 >Can we use historical consumption to allocated over the next 12 (3) months?  
 >2. We would need to show the bundled charge for each of the tariffs  
 >available.  
 >3. This should probably allow the customer the option of clearing his  
 >data instead of storing it for confidentiality. (i.e. it really is a tool  
 >for customers).

>3. What if scenarios (the Wizard)

>This is probably analytically difficult but we can dream, can't we? I  
 >would like to be able to lead a customer through a wizard that asks, "For  
 >what months/days/hours would you like to apply a scenario?" This allows  
 >us to define 8760 hours uniquely and then apply a scalar to the selected  
 >periods- up or down. Coupled with the ability to replicate tariffs, we  
 >could then show how changing consumption from the historical baseline  
 >would have saved the customer money. It also could let a customer see  
 >what he would have paid if rates were not capped during transition (i.e.  
 >if full PX volatility were applied!)



ETI 001336

>4. EDR Response

>  
>How can we modify the EDR page to show the customer's 10-day average  
>during the call periods vs. his actual response? Customers have been  
>asking for this.

>  
>As always, contact me with any questions. I don't want other discussions  
>to distract us from continuing the good fight.

>  
>Thanks

>  
>Rob

>  
>

ETI 001337

Exhibit G



**From:** kmistry <kmistry@energytracking.com>  
**To:** acolman@newenergy.com <acolman@newenergy.com>; Gustavo Flores <gflores@newenergy.com>  
**Cc:** alin@newenergy.com <alin@newenergy.com>; kmurthy@energytracking.com <kmurthy@energytracking.com>  
**Date:** Wednesday, July 05, 2000 8:28 PM  
**Subject:** Re: Fwd: 10 Day Rolling Average

---

Hi Folks ! Lots of input required !!! I am trying to identify the specs so that the design is scalable and time is not wasted.

Gustavo, please call me for discussion on EDR specifications layout at 973-340-7324.

What should the final output be (Presentation layer)?

- 24 hour X n-meters Matrix ?
- 24 hour X 1 (all meters - with single totalized values for each hour) Matrix ?
- Bar Graph ?
- Download spreadsheet link (for each row or final values)?
- Drill down view for visual confirmation (for each row)?
- Which periods are to be highlighted?
- Chosen duration periods for each hour for each meter? (I know this is too much but may be essential for internal use)

Need clarifications (Business Logic):

A rolling average typically is performed by taking a number - adding to another number - determining the average of the two >> then take the next value adding to the current average and calculate the new rolling average. This continues until all numbers / values are accounted. Andy, stated dividing the total by the number of days. This will result in an 'average' - Not a rolling average.

Furthermore, the complexity as stated below is greatly increased since n - meters are involved and query dates are variable for each hour.

Firstly, we may need to setup a table with two fields; wherein records will exist for each hour and curtailment status.

Field One: Date / Time Stamp

Field Two: Curtailment Status.

Next, we need to know if the curtailment status is customer specific, region specific, Utility specific, etc. This may add greater complexity to the Curtailment Table defined above. If this is the case, where will we be able to find the source for this information?

This step can be simplified greatly by only storing the curtailment dates and hours values. If so, when and where is this info available? Can this be automated? Should a web page be created for storing and or modifying these values?

Finally, how often does this occur? Example: If we are forced to go back 10 days and a curtailment period was present in that duration then, must we go back 10 days specifically from the curtailment period? What if another period occurs on the next iteration? How far do we go back? In simplicity, does this mean that we are to choose a period during which NO curtailment has occurred? If so, additional flags may be reqd to display chosen

7/6/2000

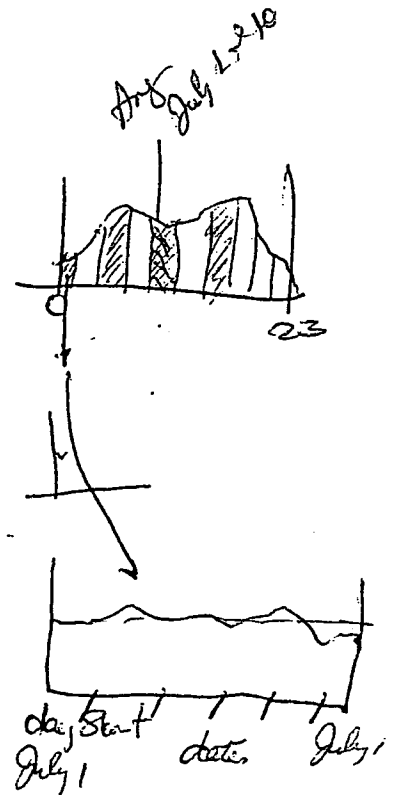
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3rd

Zone

STATE	From	To	(Msc)
<del>CA</del> CA	July 5 - 12:00	July 5 - 13:00	
CA	July 9 - 14:00	July 9 - 18:00	

July 14



Hour	Mtr 1	Mtr 2
0	<u>1000</u>	
1		
2		
4		
23		

- Prints for each corresp hr
- Start for given End Date
- Data availability
- Wk End
- Del. Chk
- Curtailment - Hour

Date-Hour	Value kWh
July 2 0	(100)
July 4 1	150
July 5 2	
23	

periods.

Each desired feature will add complexity but may be necessary for cross examination and debugging. The earlier we can identify the specs, the better.

Regards,

Keith

-----Original Message-----

From: Gustavo Flores <gflores@newenergy.com>

To: acolman@newenergy.com <acolman@newenergy.com>

Cc: kmistry@energytracking.com <kmistry@energytracking.com>; alin@newenergy.com <alin@newenergy.com>

Date: Wednesday, July 05, 2000 7:04 PM

Subject: Re: Fwd: 10 Day Rolling Average

>This is great but I'll mention a few things you might not be aware of.

>

>Actual curtailment hours should be excluded from the calculation. This  
>means that if a curtailment was called on both a Monday and the following  
>Tuesday, then we would have to go back 11 days to compute the 10 day  
>rolling average. This should be done on an hourly basis meaning that for  
>one hour we might have to go back 11 days another 12 days or 13 days  
>depending on each individual hour's curtailment/no-curtailment status.

>

>

>

>

>Andrew Colman writes:

>>Gus -- ETI thinks that they could have an automated 10-day rolling  
>>average shown in WebJoules in a week. Keith needs to make sure that he  
>>has the tech spec correct. Please edit and expand on what I wrote below.  
>>By the way, if a customer has multiple meters on EDR, would he want to  
>>add them together -- ie add 10-day kWh average for hour 18 for meter 123  
>>to the same for meters 456, 789, etc . . .

>>

>>Thanks,

>>

>>Andy

>>

>>Keith -- Hot need for our CA customers on the Emergency Demand Reduction  
>>(EDR) curtailment program. They need to have automatically calculated  
>>for them:

>>

>>A 10-day rolling average of kWh for each hour between noon and 8pm  
>>inclusive. Show as table and plot. (Suggest doing all 24 hours, just  
>>highlight the noon-8 pm period)

>>

>>Suggest adding on menu tablet: Energy Usage . . . Add a section between  
>>Monthly and Daily that is "Ten Day Avg"

>>

>>Any chance of getting this done really quickly?

>>

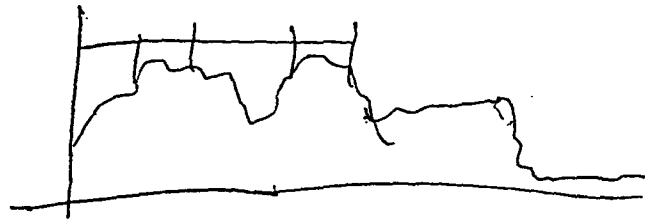
>>Andy Colman

>>AES NewEnergy EIS

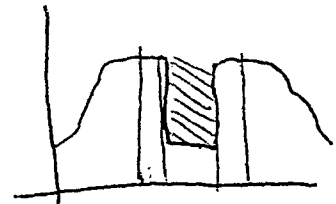
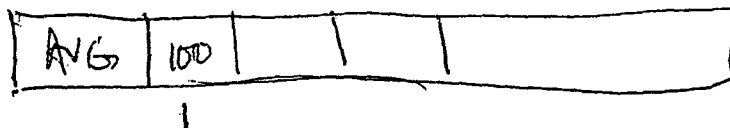
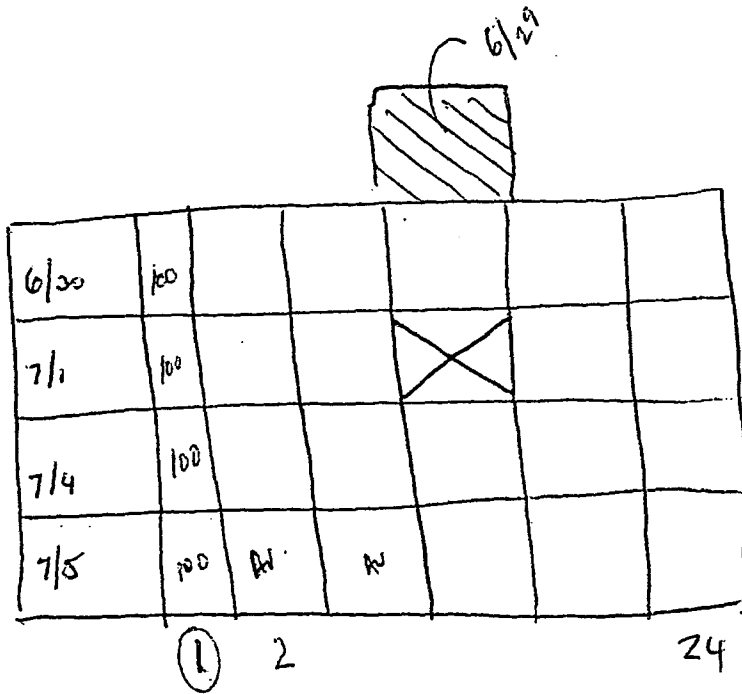
7/6/2000

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FTI 000400

To End



2. Select Last Day Step - 1 Date
3. CR of " = Curr Table - ~~Var~~  
- If so  $\text{Var} = \frac{\text{Var} + 1}{\text{Var} + 1}$  Exit

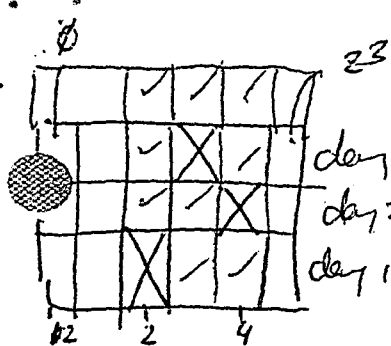


>>Office & Fax: 650.948.0566  
>>Walnut Creek: 925.946.5951  
>>Mobile: 650.222.7655

>  
>  
>

7/6/2000

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- ① killing 1/5 straight  
② One or more

CT
STATE - CA
From Date -
End " " -

CT  
day 1 - hour 2  
" 2 - hour 4  
" 3 - hour 3

- Bids by Group  
③ View individually

0 - 0  
1x2+1 - 3  
2x2+1 - 5



- 10 days 2 Year - 10 DAY

0 - 0  
1 - 2  
2 - 4  
Curtailment → hours  
Yesterday 12 ~ 1

30 hrs max  
15 days

Min. for 2 hrs  
Max for 8 hrs  
12: Noon to 8 Pm

- ④ No wk End or Holidays

- ⑤ 10-data points

Wk Ends  
Hols  
Curtail Sup

800-566-0901

0, 1, 2, 3, 4, 5  
8, 6, 8, 8, 8, 8

Exhibit H

RECYCLED

**Specifications for Curtailment Module**  
**Initiated by Keith Mistry**  
**August 21, 2000**

In the development environment, N-questions are posed when specifications are written. N x N issues and questions will arise during development. Upon deployment N-unheard of wish lists will arise. Therefore, any ideas, thoughts – no matter how trivial you may have; please note that this is the time to state them. Feel free to use the Message board or Project Management module for your inputs or simply email responses to our group.

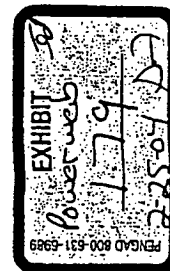
Your valuable inputs will make this project successful!

**Goals:**

1. Allow a user to participate by reducing their consumption.
2. Allow automatic notification to users via email, and or fax, and or page.
3. Track consumption for potential rebate or penalty.
4. Historical tracking for past performance, confidence level, participant stability, etc.
5. Potential and actual rebate calculations for participants.
6. Log all key events / inputs.
7. Group multiple participants into a portfolio to allow multiple regional / territory specific curtailments.
8. Engage corrective action(s) for participant(s) not performing during curtailment period such as penalty reporting.
9. Allow participants to create a load list, associated kW and potential shed durations (hours / days / months). Allow user to create a report for internal use and distribution. Storing this info will also allows us to target key or selective entities without blasting notifications to all members.
10. Up to the minute consolidation, performance to actual commitment - reporting or access to key program managers.
11. As real time as possible in consolidation and reporting.
12. Allow inputs for secondary fuel source – on site generation.
13. Automatic load shed of specified I/O point(s) with control within (this is a separate sub project by itself and requires participant willingness to hand over control).

**Inputs:**

- Load Curtailment duration.
- Participant load reduction commitment. Duration required?
- Percentage deviation allowed (user specific).
- Power Exchange rates.
- Participant information – email, fax, pager, phone, etc.



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- Optional party notification. Participant can add N-parties to notify.
- Historical energy usage.
- Average usage calculation.
- Dynamic password creation for each participant. (sent via email). Note: not critical as long as participant using a Parent ID engages.
- Desired Load reduction. - Bucket max value?
- PX and Zone identification.
- Participant delivery price \$/kWh or MWh.
- Participant confirmation of event notification.
- Load(s) identification and control handover by participant.
- Number of warning notifications - max limit.

**Output:**

- Notification of acceptance of participant.
- Committed v/s actual consumption reduction during curtailment.
- Rebate / penalty amount.
- Graphical display:
  1. kWh v/s time
  2. kW v/s time
  3. PX rate v/s time
  4. Actual Load reduction from average usage.
- Historical summary of prior curtailments and results.
- Average consumption by hour. 5-day / 10-day table.
- Warning notification.

**Modus Operandi:**

This section has not been built upon because there are many unanswered questions. This is a major project and requires input from knowledgeable individuals to optimize development and execution time. Also, it must be made extensible for use around various regions.

- Which PX's are to act as the market source for spot pricing?
- Is CalPX one of them? If so, how do we associate a zone to a participant?
- Does anyone know where multiple PX's info is available?
- What level of PX information is being collected currently at NE and at what frequency is this information updated? If available, can this be utilized as a source for spot market data?

- Is the energy delivery price fixed for each participant or does it fluctuate? If it fluctuates, where is this info available? Finally, who internally can or will provide this info or should this simply be an administration input? If this becomes an admin input then who will enter this?
- Is the rebate calculated based on hourly reduction or by each curtailment period or on a daily basis? If by curtailment period, can more than one curtailment periods occur in a single day? If so, should the rebate be calculated by curtailment period?
- Does the participant enter a total kWh / Mwh reduction for the curtailment period or is this input based on hourly reduction?
- Is there a minimum curtailment block amount that a participant must enter? Say, 1000 kWh.
- If participant enters commitment for a curtailment period and not hourly, then do any steps need to be taken if the usage exceeds the hourly average. Example: Participant commits to a 400 Mwh reduction for a 4-hour curtailment period. His last hour's usage is 125 Mwh. Do we send a warning? If so, when do we send a warning?
- As expressed above, we will try to use the hourly usage for a participant to determine if he / she is within bounds. In addition, a deviation factor x% +/- will be utilized. Does this sound OK?
- Who determines or what factors determine how is the rebate is calculated? Is this value the hourly spot market price? What margin value must be added for program management?
- Does demand reduction play any part in any calculation?
- If a participant changes his mind or is unable to; subsequent to commitment, then what are the possibilities? (a) Prior to curtailment (hours or minutes before). (b) during the curtailment. What transactions (calculations, notifications, feedback / confirmation of cancellation, etc.) need to be performed at either stage?
- Is there an engagement fee / credit?
- What information should the participant be exposed to? Help us define minimum and maximum information levels.
- Many calculations will have to be done on-the-fly for real time reporting which will primarily be based on pre-specified curtailment hours. These calculations will change if a curtailment period is shortened. For example: the original curtailment called for 14:00 to

18:00. However, at 16:XX hours we are notified that the curtailment now will end at 17:00 hours. Note: This is a very critical issue, as ALL broadcast values will change based on final conditions. Your input is key. Of course, not broadcasting until the end of a curtailment period eliminates such issues but - we - must - be -as - real - time - as - possible! That's the goal.

- Are any participants expected to have multiple facilities? If so, should the participant enter curtailment values by facility or as a group? If by a group, what if any, measures should be taken if one or more facilities are under performing? This is assuming that as a group they are under performing. This scenario, where more than one facility for a single participant is engaged in curtailment will add further complexity. N-facilities, N-meters, N-users to notify, N-independent calculations requiring consolidation.
- Are there any conditions or is there a scenario where the participant is kicked out or not allowed to participate?
- What if a participant wants to engage in the curtailment, but not for the full duration? Can they? If so, what issues need to be considered and limitations to be placed?
- How do we actually determine a participant's reduction in usage during a curtailment period? The logical answer is to define / calculate a baseline based on previous consumption history. The current EDR module takes a 10-day average not accounting for previous curtailments, weekends or holidays. Should this be the established baseline during a curtailment period? Should this be reduced to a 5-day average or an admin-defined value?
- What level of notice in terms of time is available for a curtailment period?
- What is or should be the response time of the participants upon call to a curtailment?

Note:

We have not engaged issues on load point(s) control at this stage.



Fwd: Re: Re(2): Re(2): Curtailment Project

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Tue, 16 Jan 2001 14:14:17 -0800

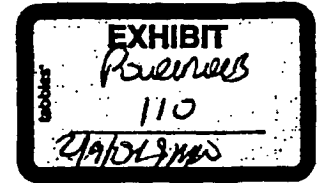
From: Keith Mistry

lbudike@2powerweb.com

Subject: Fwd: Re: Re(2): Re(2): Curtailment Project

To: Doug Short

Attachments: AES New Energy Proposal 1-1.doc 189k



Doug, FYI

We are analyzing now.

Suggest you do not distribute given Budike's concerns, but you can abstract pricing into your table. More tomorrow.

Keith:

Here is a proposal with pricing.

Please, the information contained in this proposal is confidential. Please confirm with other AES businesses that AES corporate has an executed NDA with Powerweb Technologies. This information should not be duplicated.

A hard copy will be overnighted to you in California.

Lou

----- Original Message -----

From: "Keith Mistry" &lt;Keith\_Mistry@newenergy.com&gt;

To: &lt;lbudike@2powerweb.com&gt;

Sent: Tuesday, January 16, 2001 1:28 PM

Subject: Re(2): Re(2): Curtailment Project

«&gt; Lou.»

«&gt;»

«&gt; The evaluations are underway now. Can you email the proposal?»

«&gt;»

«&gt; I am on the road in Ca»

«&gt;»

«&gt; You can mail to us here»

«&gt;»

«&gt; AES NewEnergy»

«&gt; 2175 N California Blvd»

«&gt; Suite 300»

«&gt; Walnut Creek CA 94596»

«&gt;»

«&gt; Keith»

«&gt;»

«&gt;»

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Fwd: Re: Re(2): Re(2): Curtailment Project

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## **POWERWEB TECHNOLOGIES, INC.**

---

*is proud to present*

### **AES New Energy**

*a proposal for a Distributed Generation Platform utilizing the*

## **Omni-Link<sup>®</sup> Internet Energy Platform**

**Powerweb Technologies, Inc.**

415 East Baltimore Pike  
Media, PA 19063

---

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Omni-Link and the Powerweb are registered trademarks of Powerweb Technologies, Inc.

NE004674

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**EXECUTIVE SUMMARY**

As a follow up from our discussions, Powerweb has been asked by AES New Energy to provide a pricing proposal that outlines the requirements as stated in your RFI. The services include the following:

**BASE SERVICES**

- 1) Custom Internet Platform
- 2) Custom Graphics Design (HTML & Database)
- 3) IT Integration and Database Design
- 4) HTML Parse Program Design
- 5) "Real Time" Demand Feed Operation and Integration Design
- 6) "Real Time" Pricing (Day ahead – 24 hour price profile) Integration and Design
- 7) Notification Method (pager, cell phone, e-mail) Integration and Design
- 8) NegaWatt Calculation Database Integration and Design
- 9) Settlement System Database Integration and Design
- 10) Hosting for Customers
- 11) Server Maintenance for Customers

**ADDITIONAL SERVICES**

- 1) Billing Engine Service
- 2) Historical Energy Information Service
- 3) Energy Savings Engine Service
- 4) All Additional Omni-Link Services

**ADVANCED FEATURE SERVICES**

- 1) Load Control
- 2) Generation Dispatch

Powerweb is fully prepared to design, test, and deliver the real time customers servers and platform by May 31, 2001. The costs are the following:

Base Services	\$250,000 /per year	\$15/customer/month (Real time servers approximately \$7-\$11k)
Additional Services	\$50,000 / per service	50% of revenue generated
Advanced Features	Available on a per job basis.	

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**OMNI-LINK® APPLICATION DELIVERABLES****BASE SERVICES****CUSTOMIZED ENERGY PLATFORM PORTAL(BASE SERVICE #1)**

Each of AES New Energy's curtailable customers will have a customized energy portal set up with a selection of curtailment engines that meet the customers' needs. Each will have a personalized message to the user that accesses the portal. This portal will act as the centralized platform for all energy services offered to the customer by AES New Energy. This portal is distributed seamlessly in a private label brand to your customers.

Powerweb believes that the deployment of its Omni-Link service solutions can be a transformational event that dramatically improves the performance of a utility's customer care and significantly reduces the costs of transferring energy information to the end use customer. Yet such dramatic benefits can be realized only when the software meets the client's functional needs and is successfully implemented. This means on-time, on-budget, high-quality implementations, which equate to highly satisfied clients eager to expand their relationship with Powerweb.

**CUSTOMIZED DATABASE DESIGN AND INTEGRATION (BASE SERVICES #2-4)**

Energy Suppliers have on average one main collection method (MV-90) and four to six back end-product IT structures or 3<sup>rd</sup> party packages that process this data. The packages could be Lodestar, Derivium, CIS, Load Vision, OLEA, MV-PBS, while the structures could be CSV format, Binary format or an internal EDI transfer protocol. Powerweb clearly understands these back-end systems and is able to execute a smooth transition and information exchange between AES New Energy's server farms and Powerweb's server farm. This starts with a structured approach to the utility's IT personnel in order to "plan" a successful information exchange. This information exchange takes the following 8 steps:

**1. Information Meeting:**

Determine the business problem to be solved, overall project scope, feature set, and deployment requirements. Discuss what systems are currently being utilized for information exchange.

**2. Data Chart Design:**

Chart information needed from systems to provide Omni-Link products and services. Develop a high-level proposed solution description,

**3. Extraction Meeting:**

Agree on feasible extraction points, communication and security methods with AES New Energy's IT personnel. Assign responsibilities. Make the changes or modifications required to the high-level solution.

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**4. System Design Chart:**

Chart current system configuration adding all systems and extraction points. Review high-level solution for feature or scope changes, project architecture, and data flow. "Blue print" the final solution.

**5. Information "Format" Retrieval:**

Information formats and samples are provided for database design and application integration.

**6. Database / Engine Design:**

Database / Rate / Billing Engines are designed and tested. Constructed as a series of milestones and software modules are tested and peer reviewed. Simulation testing used to identify performance problems and system bottlenecks.

**7. Information "Live" Retrieval:**

Live information is brought "on-line" and security and configuration is completed

**8. Testing:**

Final Q/A testing is executed on all Omni-Link products and services.

Powerweb employs a business-case-driven, fixed-price/fixed-scope implementation methodology. This methodology is summarized in Figure 3 and centers on forming an active partnership with the utility. Powerweb guides the project team through a well-defined, phased solution process developed from repeated successful experiences at implementing Omni-Link. The key activity that drives successful project implementation is a 3-to-5 day Solution Workshop. During the workshop, senior Powerweb solutions experts and a cross-functional AES New Energy team work intensively to finalize all aspects of the software configuration to align with each utility's specific business needs and priorities. As the closing event for the workshop, the utility team presents the project success plan to their company's executives (the Management Board) for approval. The results of the workshop are then memorialized in a solution specification document that serves as the project plan and as the basis for managing the solution activation process.

**REAL-TIME DEMAND INTEGRATION (BASE SERVICE #5)**

This engine utilizes our on-site gateway server to view demand instantaneously over the Internet in graphical form. AES New Energy will have access to customer compliance, curtailment and a time stamp of when the customer curtailed. The customer will be able to view whether or not their action produced the results they expected. Successful demand management and energy conservation are a direct result of viewing results quickly. This advanced metering engine makes use of a generated utility pulse and our gateway server to the Internet.

**REAL TIME PRICE FEED ENGINE (BASE SERVICE #6)**

All energy customers are concerned with the price of energy. Those on "real-time" rates need to be informed when to avoid the high market prices. Those on fixed

rate contracts want to be informed on how they can profit by providing "NegaWatts" back to the utility during volatile market swings. This engine will allow for price discovery of the 24 hour day ahead market that will be posted by AES New Energy and made available through the Omni-Link Portal. The end user will be given the opportunity of setting up triggers to alarm them of the market volatility. It will send this information to a pager, cell phone, pda, or via e-mail. This feed will be provided in any format to Powerweb Technologies for integration.

#### **ENERGY NOTIFICATION ENGINE (BASE SERVICE #7)**

Timely notification of curtailment and economic alerts is critical to the success of maximizing the revenue achieved during market volatility. Currently, most curtailment notification systems are done by telephone and fax which is time consuming and can cause the utility to lose money and potentially pay penalties. The Omni-Link Platform will allow the end user to receive "real-time" pricing and reliability signals from the NY ISO or AES New Energy. This will be done by having our dual location servers send out messages to e-mail systems, pagers, cell phones, and PDA's. Powerweb Technologies has tested the system in the Summer of 2000 and successfully routed all reliability and pricing alerts flawlessly.

#### **ENERGY SETTLEMENT ENGINE (BASE SERVICE #8)**

The energy settlement engine will calculate the settlement funds due customer on a daily or "real-time" event basis based upon the amount of kWh and "day ahead" prices set by AES New Energy. This will represent the dollars generated from the activation of an energy management system or the start up of an on site generator. At the end of each day, the Omni-Link® server will send the AES New Energy server the information required to settle this transaction based upon the current incentive plan rolled out in the tariff.

#### **CURTAILMENT GRAPHING ENGINE (BASE SERVICE #9)**

The curtailment graphing engine is an engine that will compare an event day with a non-event day and produce a graph that will display the "NegaWatts" associated with the curtailment. The "NegaWatt" will be calculated by using a mutually agreed upon methodology. This server application will rely on either AES New Energy's half-hour historical demand data or Powerweb Technologies' real time gateway server.

#### **HOSTING AND SERVER MAINTENANCE (BASE SERVICES #10-11)**

Internet Hosting and server maintenance will be performed for all customers of the system.

**ADDITIONAL SERVICES****BILLING SERVICE**

Powerweb Technologies will provide AES New Energy with a billing engine capable of providing billing calculations necessary for the real time tariff rates. Powerweb Technologies will calculate the bills by making use of the real time prices, MV-90 demand information, and the associated tariff of the customer. This automation of the process will enable AES New Energy to process their bill and will provide the calculations to be integrated into AES New Energy's billing system.

**HISTORICAL ENERGY USAGE SERVICE**

Customers who have wanted to retrieve their energy information for either analytical purposes or for shopping for a competitive supplier have found that it takes it takes anywhere from hours to weeks to receive from the utility. The historical information can easily be accessed over the Internet in either graphical or tabular forms. Two years worth of historical energy information can be pre-loaded into the Powerweb servers and made available to all of the customers through a subscription service.

**ENERGY SAVINGS STRATEGIES SERVICE**

Most commercial customers operate their facility day-in and day-out with generally the same amount of load. Although management is aware of energy costs, operations will seldom be disrupted in order to reduce energy use. However, commercial customers are usually charged for their energy through a rate tariff that changes costs based on the time-of-day and usage amounts. If the operators can shift the time of operation, they can reach their peak demands during different windows of rate tariffs. By shifting demand, not changing demand, a customer can save thousands of dollars from the existing rate tariffs. The savings strategies engine will enable customers to instantly determine the monetary value of savings by shifting certain percentages of demand into different time windows. The Omni-Link® Platform offers this service which is not available on the market unless performed by an energy engineering study.

**ADVANCED FEATURE SERVICES****LOAD CONTROL ENGINE**

The need to integrate customers' facility systems to the portal will become important as companies decide to take advantage of savings opportunities in an automated fashion. It will be important that the energy platform can integrate to all EMS, and lighting systems in order to execute energy savings measures. The Omni-Link® system offers the ability to communicate through a single Internet site to all energy management and related systems on an enterprise-wide basis. As a technology neutral and compatible system, the Omni-Link® system is not limited to which types of energy management and control systems it can communicate to.

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**GENERATION DISPATCH ENGINE**

The need to integrate a customers' facility systems to the portal will become important as companies decide to take advantage of savings opportunities in an automated fashion. It will be important that the energy platform can integrate to generators systems in order to execute energy savings measures. The Omni-Link® system offers the ability to communicate through a single Internet site to all energy management and related systems on an enterprise-wide basis. As a technology neutral and compatible system, the Omni-Link® system is not limited to which types of energy management and control systems it can communicate to.

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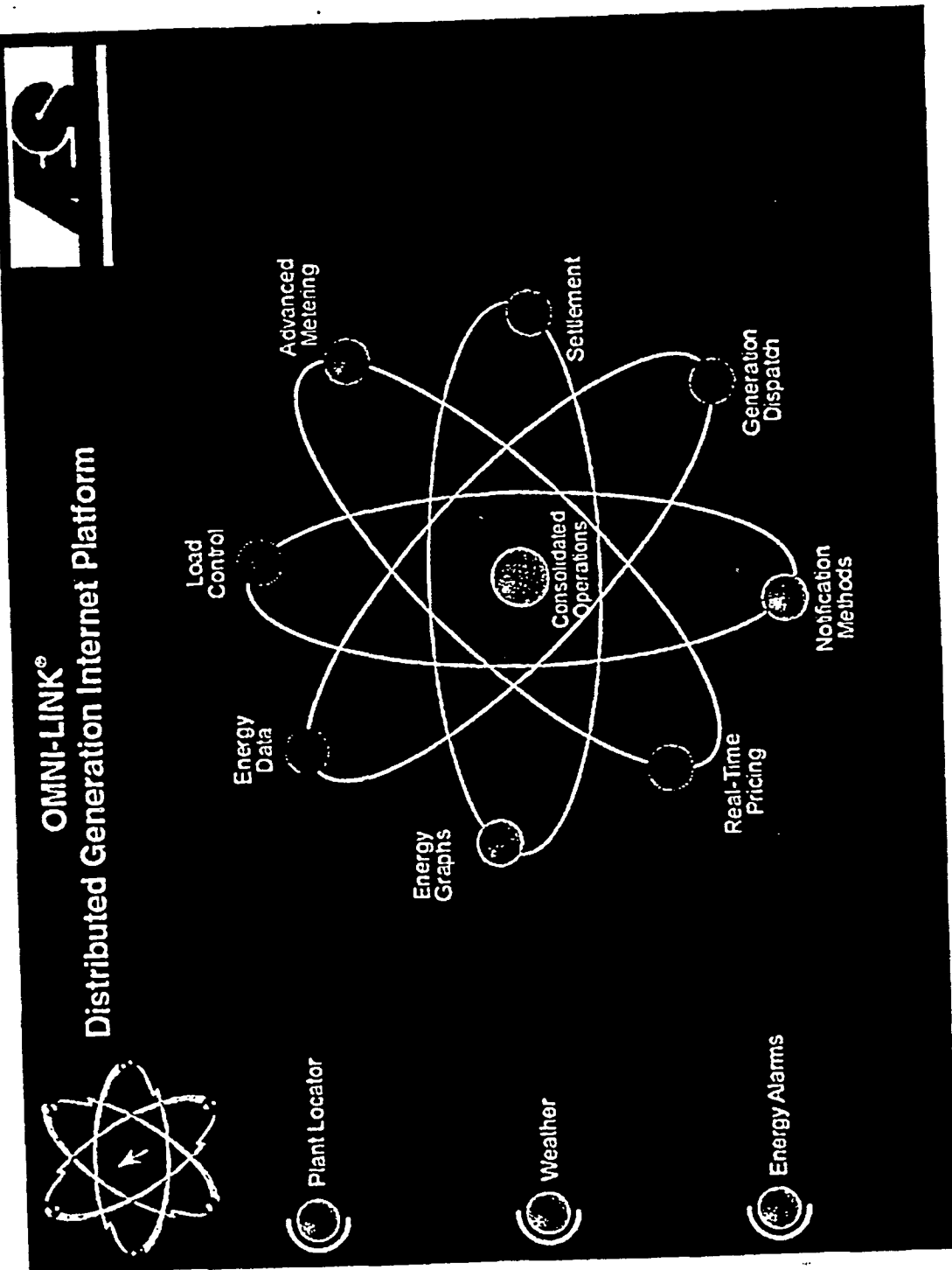
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OMNI-LINK® INTERNET PORTAL & GRAPHIC DESIGN



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## **OMNI-LINK® SOLUTION SPECIFICATIONS**

### **AES New Energy's Customer Requirements for "Real-Time" server:**

The following is a list of requirements normally to be furnished and provided by AES New Energy's customer:

- An outlet (120VAC) within ten (10') feet from new enclosure.
- A working telephone line and a non-PBX number.
- Meter Factor or Pulse Value for each of the meter pulses for meters not installed Powerweb Technologies.

### **Material Requirements Provided by Powerweb**

The following list of materials will be required for each on-site server installation:

- One (1) NEMA 1 enclosure,
- One 14/3 SJO cord with strain relief
- One 15-amp plug
- One power supply
- One null modem
- One Power Conditioner
- One UPS Back Up System
- One Omni-Link® server computer.

### **Labor Requirements:**

It will take approximately 16 man-hours to completely install, wire and set-up the on-site Omni-Link® server.

### **Installation Scope:**

The following activities are required for installation and set-up of the Omni-Link® server.

- Mounting of server enclosure. This will include server, transformer, low voltage UPS system, and communication port. (Approximately 3-6 hours)

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- Install EMT conduit from server enclosure to the nearby telephone to utilize existing cable for phone line. (Approximately 1 Hour)
- Install pulse isolation and paralleling apparatus to isolate and parallel the pulses to maintain connectivity with the existing meter equipment. (Approximately 1 Hour). Run AC power to the location and power the server (Approximately 1 Hour)
- Integrate the meter protocol and connecting pulses to server. Program the unit for link up with Internet server. (Approximately 1-3 hours)
- Install EMT conduit from the Pulse Meter Interface to the server enclosure and pull a four (4) pair cable to provide pulses to the server. (Approximately 1 Hour)

The physical Omni-Link® server is not proprietary to Powerweb Technologies. However, although a standard server microprocessor is utilized for platform integration, the operating system, which operates the server for various translations, is the exclusive property of Powerweb Technologies.

Our current rates for installation and start-up labor are as follows:

- \$150.00 per hour straight time Monday through Friday 8am to 4:30pm
- \$200.00 per hour for overtime and weekends
- Travel if needed to facilitate installation.

There will be minimal interruption or disruption to AES New Energy's customers' operations during the installation of the Omni-Link® Internet Energy Platform. If a new metering device is required on site, depending on the installation required, shut-off of supply may be required. For example, a new gas meter may require temporary shut-off of gas while there is a meter change-out. For electrical metering devices, Powerweb Technologies use split-core current transformers that can be installed in most cases without disruption to the service. Powerweb will work with AES New Energy on all metering changes and installations, if any are required.

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